2024 Air Quality Annual Status Report (ASR)

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

Date: 26th June 2024

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Report Reference Number	FINAL_ASR_2024_v1
Date	26th June 2024

Executive Summary: Air Quality in Our Area

Air Quality in Blackburn with Darwen

Blackburn with Darwen is a semi-rural unitary borough located in the east of Lancashire. According to the 2021 census, the population of Blackburn with Darwen increased from approximately 147,500 in 2011 to around 154,700 in 2021. An additional c.7,000 residents live in rural villages and hamlets of Hoddlesden, Edgworth, Belmont, Chapel Town and Tockholes which surround the two major urban centres.

According to the 2021 census, the population of the Borough tends to be younger than the national average, and younger than the average for the north-west as a whole. For further information see (How life has changed in Blackburn with Darwen: Census 2021 (ons.gov.uk)). The borough also has some of the most deprived Lower Super Output Areas (LSOAs) (areas similar to wards) in the country[1]. This is important to note as there is also often a strong correlation with equalities issues and poor air quality ie. areas with poor air quality are also often less affluent areas[2,3] (see figures 1 & 2 below).

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[1] According the 2019 Indices of Deprivation. For further details see https://blackburn-darwen.org.uk/wp-content/uploads/JSNA-Setting-the-Scene-2022_23-FOR-WEBSITE.pdf

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

[3] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
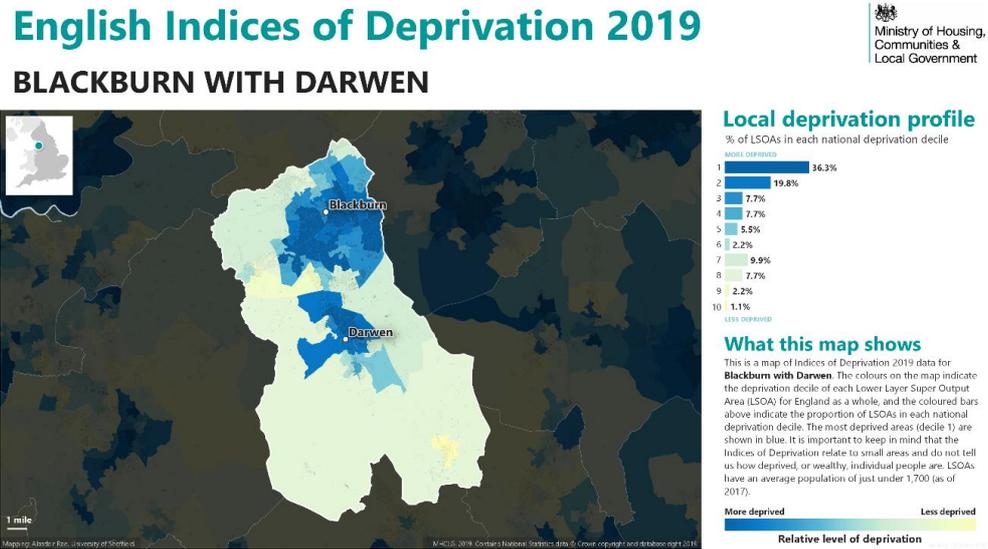
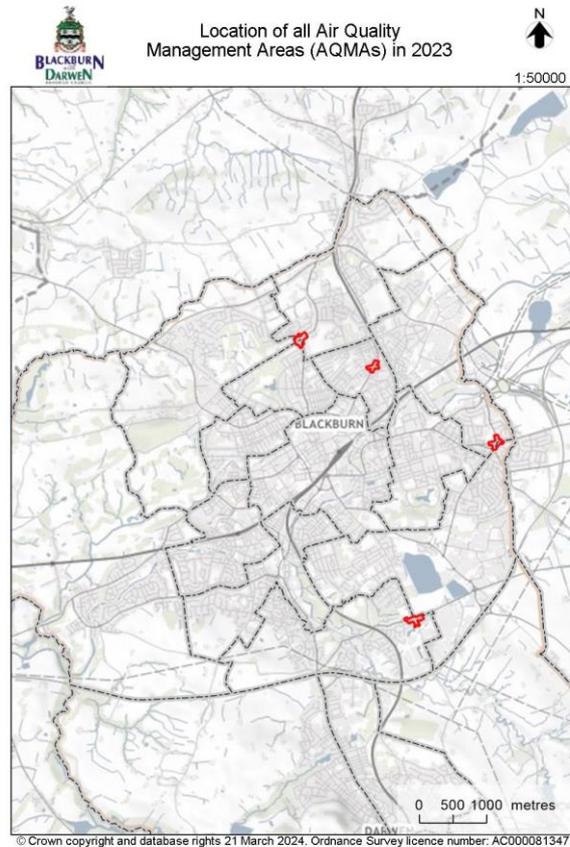**Figure 1: 2019 Deprivation Indices**

Figure 2: Location of Air Quality Management Areas January 2023 (AQMAs)

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year[4].

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, as noted above, people living in less affluent areas are most exposed to dangerous levels of air pollution[5].

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[4] UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

The main air pollutant of concern in our borough is man-made nitrogen dioxide (NO_2). It can cause inflammation of the airways, increasing susceptibility to respiratory infections and to allergens, and it may exacerbate the symptoms of those already suffering from lung or heart conditions. It can also impact upon the environment.

There are various national sources of this pollutant, such as power stations, industrial combustion process and home heating. However, in our borough traffic is a key source. Monitoring over the years in our borough has shown that raised levels of NO_2 can be encountered by homes close to our more congested urban junctions, where emissions from slow moving traffic can get trapped by tall buildings close to the road eg:

Figure 3: Idealised Street Canyon Diagram (Note Vehicle Emissions Trapped Between Tall Buildings)
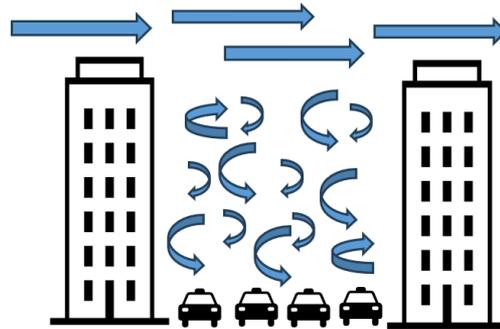
Long Term Trends

NO_2 levels are influenced by a range of factors, including the weather, and as a consequence there can be significant short-term variation at monitoring sites, but there is strong evidence of a significant long term improvement.

Nitrogen dioxide levels are currently measured at 46 locations across the borough, and there has been monitoring every year for ten years at 31 of these sites. There have been no exceedances of the objective anywhere in the borough since 2017. Excluding 2020 (because of the impact that COVID-19 had on traffic levels) the average NO_2 concentration across these sites has fallen year on year from 81% of the annual mean national objective in 2016, to 48% of the objective in 2023. There has also been a yearly reduction in the maximum measured NO_2 annual mean at our monitoring locations across the Borough[6], from 117% of the national objective in 2016 to 68% in 2023.

A new Automatic Monitoring station was established in September 2023 at Audley Lane in Blackburn. This forms part of the Automatic Urban & Rural Monitoring Network (AURN). The site is considered an urban background site which monitors ozone and particulates. There is also a black carbon monitor at the station. The council has been retained to

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[6] Excluding 2020 because of COVID

provide Local Site Operator (LSO) duties at the site. Further details can be found here Site Information for Blackburn Audley Park(UKA01025) - Defra, UK.

Figure 4: New AURN at Audley Lane

What is happening in our Air Quality Management areas (AQMAs)

In 2016 there were eight AQMAs in our borough which had been declared because of high annual mean nitrogen dioxide levels. Since then, all but one has been revoked: AQMA 8 (Accrington Road & Burnley Road) was revoked in December 2017; AQMA 3 (A666 between Robert Street & Wraith Street), AQMA 4 (Witton) and AQMA 5 (Earcroft) were revoked in September 2019; and AQMA 1 (Intack), AQMA 2 (Bastwell) and AQMA 7 (Four Lane Ends) were revoked in September 2023. This just leaves AQMA 6 (Blackamoor) which is still in force. Further details can be found on the Council's air quality pages at Air quality | Blackburn with Darwen Borough Council

In 2021 Blackamoor Road was permanently blocked off and traffic re-routed onto the newly constructed Issa Way which has a more open setting as seen below:

Figure 5: Blackamoor Link Road
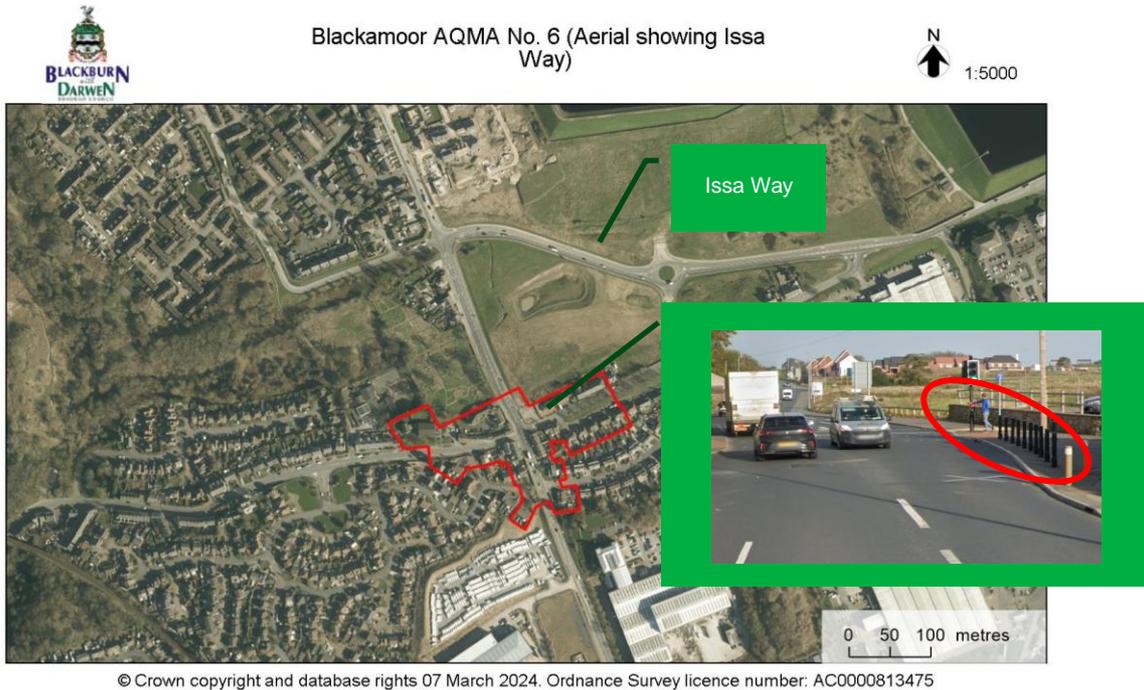
As a consequence, the junction at the heart of the AQMA has changed from a four-arm junction to a more free-flowing three arm junction. This work was in part implemented to improve air quality.

Monitoring results since the junction improvements were made suggest that the work has improved the air quality at DT 38. As a result, there have been no exceedances of the NO2 quality standards and objectives at this AQMA since 2017. Therefore, in 2024 we intend to start the process of consultation with the statutory consultees and the public before a formal decision to revoke the AQMA is made. Based on the current information, it seems appropriate to revoke this AQMA. This is in line with the appraisal comments provided by DEFRA in regard to the 2023 ASR which noted that:

…AQMA 6 is currently not revoked despite having been compliant for seven years as a new junction layout was introduced in 2021. However, it is recommended to include a year in which the Council is considering revoking this AQMA if it has been compliant. If AQMA 6 is compliant in 2022, 2023 and 2024, this AQMA should be revoked.

They also comment that:

Please be aware that unless a likely exceedance has been identified in the area, Defra will not appraise AQAPs for AQMAs that have been in compliance for five years. Local Authorities will instead be advised to revoke the AQMA.

Actions to Improve Air Quality

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

The Environmental Improvement Plan[7] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant most harmful to human health. The Air Quality Strategy[8] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[9] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The delivery of active travel projects during 2023 remained an important objective for the Council, offering the potential to deliver positive health & wellbeing, placemaking, and climate change related outcomes. This has involved work with various stakeholders including Public Health and Lancashire County Council and is particularly important in Blackburn with Darwen where there are significantly lower rates of walking and cycling for travel than the national average.[10]

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

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

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

[10] Blackburn with Darwen Joint Local Health and Wellbeing Strategy 2023 – 2028

Active Travel Infrastructure:

- Blackburn with Darwen Borough Council have been successful in receiving two rounds of funding Tranche 1 £77,000 and Tranche 2 £292,600 from the 'Active Travel Fund' to support pop–up and more permanent segregated cycle/walking lanes. This was previously reported in the 2022 ASR. As a result of the funding, two schemes were completed: the North Blackburn Stride and Ride scheme which involved the installation of a new shared pedestrian and cycleway along the A6119; and the Blackburn Stride and Ride Phase 2 which connected Blackburn Town Centre to Witton Park via a segregated cycleway along the A674 Preston Old Road and A6447 Buncer Lane, ultimately joining up with NCR6. This part of the scheme cost £167,370.

- The Local Cycling and Walking Infrastructure Plan (LCWIP) Phase 3 report was approved by the Council's Exec Board on 7th Dec 2023. It prioritises the walking and cycling routes identified at the network planning stage towards delivery of a comprehensive and cohesive active travel network for Blackburn with Darwen. Details can be found at [BwD LCWIP Phase 3 Prioritisation report final.pdf (blackburn.gov.uk)](blackburn.gov.uk). High Priority Routes currently being progressed include:

  - **Southeast Blackburn Active Travel Network** – Around 17km of routes being improved for walking and cycling across SE Blackburn focused on the Royal Blackburn Hospital (RBH). Funding is committed through Levelling Up Fund with completion by December 2025.

  - **The Leeds & Liverpool Canal corridor** - Identified as an early priority for further development with opportunities to improve access and connectivity. Several of the schemes identified are currently going through detailed design in anticipation of future funding being identified. These include:

    - *Whitebirk Drive / Philips Road*: Introduction of crossing facilities at the junction for pedestrians and cyclists along with improvements to footways for shared use provision in line with LTN1/20 standards connecting to Weavers Wheel.

    - *Red Lion Roundabout*: New and improved crossing facilities at the junction for pedestrians and cyclists along with improvements to footways for shared use provision in line with LTN1/20 standards, connecting to Weavers Wheel and Leeds & Liverpool (L&L) Canal.

- *Eanam Old Road*: Improved connection to L&L Canal from Eanam Old Road and improved linkage to Eanam/Salford linking to NCN Route 6.

- *Blakewater Road Link*: Improvements to widen existing footpath for shared use connecting Blakewater Road to L&L Canal

- *A666 Bolton Road*: New controlled crossing on route of canal towpath. Canal towpath users are currently required to walk to the A666 Bolton Road / Infirmary Road junction to cross safely - a deviation of 170m.

- *Highfield Road*: New crossing on route of canal towpath. There is currently no formal crossing provision although all canal towpath users are required to cross Highfield Road as no alternative.

- **Barbara Castle Way Priority Route** – Identified as a high priority LCWIP route linking NCN Route 6 and Leeds and Liverpool Canal with Blackburn College and Blackburn Town Centre. A Feasibility Study is underway to identify proposals etc.

Active Travel Initiatives & Policies:

- Clean Air Day 2023 was launched on 15th June 2023. The theme for this year's Clean Air Day was the impact air quality can have on mental health. The aim was to raise awareness of this issue and encourage residents across Blackburn with Darwen to leave their vehicles at home, go outdoors and enjoy nature whilst visiting our green spaces. Two trails were created across the two towns and are located in Witton Park and Bold Venture Park. The trails comprise of emoji signs that highlight the benefits of clean air for mental health and well-being, using quotes, facts and QR codes for further links to resources. Further details can be found here [Clean Air Trail - Be Well BWD](#). Three primary schools came to walk the trails on the day, and at the launch of the initiative there were 93 views on the site. The trails are expected to become permanent fixtures in the parks, with access to the Be Well Clean Air site being monitored via the QR code being scanned.

- **The Joint Local Health & Wellbeing Strategy 2023-2028** was adopted in 2023. Blackburn with Darwen's Health and Wellbeing Board brings together leaders from across the local health, social care and the wider system. A specific function of the Health and Wellbeing Board is to produce a Joint Local Health and Wellbeing Strategy (JLHWS) which details the shared priorities and approach to improving health and wellbeing and reducing health inequalities, over the coming years. This

new strategy details the priorities and approach to 2028. These include actions to address healthy homes, places and communities. Air pollution is considered within this priority, along with an increase in active travel. Further details can be found at Blackburn-with-Darwen-JLHWS-2328-FINAL.pdf (bewellbwd.com)

- **Walking and Cycling Initiatives** continue to run through the Neighbourhoods, Wellbeing and Prevention teams in conjunction with Public Health. Throughout the course of 2023, the following participation in the various programmes was recorded:

	Guided Walks (Active Outdoors Programme)	Cycle Sessions* (Weekly re:fresh)	Adult Cycle Training (External funding/Additional provisions)	Active Travel Workshops (External funding)	Walk Leader Training
Total No. of Events or Sessions:	244	94	14	1	6
Total No. of Participants:	2120	656**	37	8	36

Sessions did not run from Nov 23 – Mar 24 due to Active Outdoors Hub renovations

*** Accounts for throughput, not unique participants*

Development Management & Air Quality

- The new Local Plan was finalised in 2023 and was adopted in January 2024. The Local Plan places a strong emphasis on active travel and sustainability. Core Policy 3: Health & Well Being encompasses these elements of active travel and improvements in air quality as well as Core Policy 6: The Natural Environment. To this end, the Blackburn with Darwen Air Quality Planning Advisory Note (PAN) (2018), which is referenced within the Local Plan, requires updating to reflect the ambitions of the Local Plan. Further details can be accessed at Blackburn-with-Darwen-Local-Plan-2021-2037.pdf (blackburn-darwen.org.uk). Progress on the updates to the PAN will be reported in next years' ASR.

- **The Climate Emergency Action Plan (CEAP)** was updated in July 2023 and is a high priority thread which runs throughout the Councils work. Within the Local Plan,

climate change and the climate emergency are mentioned 103 times, highlighting the ambitions and importance which is attached to tackling and adapting to climate change. Core Policy 5: Climate Change provides further details regarding the scope of the ambitions in terms of climate change and development. A Climate Impacts Framework SPD has also been drafted. The priorities of tackling climate change, and the tools with which to do this, are closely linked to actions to address poor air quality. For example, the Borough aims to be carbon neutral by 2030. To this end, DM Policy 12: Clean and Green Energy will also have a positive impact on air quality. In 2024, our aim is to make further links with the Climate Change agenda in order to raise the profile of air quality within the borough, and to work collaboratively with the various stakeholders involved in pushing forward the climate change agenda to start to formulate an Air Quality Strategy and Air Quality steering group for the borough. This will be updated in next years' ASR.

Sustainable/Low Emission Transport:

- Seven electric vehicles were purchased by the Council in 2023, with a further nine due to be delivered in 2024. The Council installed 10 electric vehicle charging points (EVCPs) in nine public car parks between 2018 and 2020. In 2023 some 240,769 miles were powered by the points[11], with 297 unique drivers accessing them in 2023[12]. One charge point was installed at Councils Davyfield Road Depot in 2022. In 2023 another 11,079 miles were powered through this, whilst four more EVCPs were installed at the Davyfield Road Depot in 2023. Altogether in 2023, 23 EVCPs were available to the public across the borough, with another 55 being proposed within an upgraded multi storey car park in Blackburn town centre.

- The Council prepared a Bus Service Improvement Plan (BSIP) jointly with LCC in October 2021 setting out their priorities etc. Following this submission, the Council has been allocated £4.66m of BSIP funding for 2022-25. This is going towards improvements to bus services and infrastructure as follows:

    o Bus service enhancements

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[11] the number of miles is calculated using Defra guidance of 2.93 miles per kWh

[12] according to the Swarco dashboard

- o Continuation of bus subsidies

- o Simpler cheaper fares

- o Development of a multi-operator ticket

- o Bus priority measures (primarily upgrade to signalised junctions to include bus detection)

- o The introduction of a new 'Blackburn Circular' bus route.

- o Feasibility studies to further improve the bus route network and to consider potential for demand responsive services

These measures and other key projects that have been completed in recent years will all have had a positive impact on local air quality.

Looking forward, it is likely that all of our AQMAs will be revoked within the next couple of years, but air quality will remain an issue. There is a concern that continued growth within the Borough may lead to a 'creeping background' whereby the levels of pollution slowly increase. Currently, there is no clear evidence of a safe level of exposure below which there is no risk of adverse health effects, so Blackburn with Darwen Borough Council will continue to work with partner organisations including Defra, the Environment Agency, Public Health, and Lancashire County Council to deliver action measures in pursuit of better air quality. In addition, further emphasis will be placed on sustainable development in terms of air quality. Work with our colleagues in Development Management to address this is already underway.

Conclusions and Priorities

1. In the long term, air quality in the borough is improving

2. All monitoring results within the existing AQMA, in former AQMAs, and at other locations in the borough are below the air quality objectives. There hasn't been an exceedance of NO_2 since 2017.

3. Evidence supports a conclusion that the AQMA at Blackamoor should be revoked. The Council will consult the statutory consultees and members of the public before deciding whether revocation is appropriate.

4. Monitoring will continue across the borough targeting busy urban junctions, areas where traffic congestion is known or anticipated, former AQMAs, and the current AQMA.

5. Work will begin on devising an Air Quality Strategy for the borough, initially through establishing a working group with relevant parties within the Authority such as Public Health, Highways, Planning, Environment etc.

6. The air quality planning advice note (PAN) will be updated to reflect the new Local Plan focussing on mitigation and reducing a creeping background.

7. Data from the Audley Lane automatic monitor (which includes data for ozone and particulate matter) will be included in the 2024 ASR

8. A policy to reflect the changes to Smoke Control Area enforcement is expected to be drafted this year. Work has already begun to establish the extent to which the Smoke Control Area Orders are being complied with to assess which areas might need further targeted education regarding the Smoke Control Areas.

The Council will also continue to implement the measures identified in Table 2.2 of this report in pursuit of better air quality.

Local Engagement and How to Get Involved

There are a number of ways people within the Borough can get involved to help reduce air pollution. The great thing about taking positive action to reduce air pollution is that it many of the actions you take can also benefit the wider environment, are often cheaper than polluting alternatives, and can significantly improve your own physical and mental health.

For example, walking or biking short distances instead of using a car can help reduce pollution and allow people to get active. The NHS promotes active travel as a way of improving mental and physical health [Walking for health - NHS (www.nhs.uk)](). Public Health England have also looked at the benefits of walking and cycling on health [Cycling and walking for individual and population health benefits: a rapid evidence review (publishing.service.gov.uk)]().

Within the borough, there are many resources available to help you get started. [Refresh Blackburn with Darwen (refreshbwd.com)](refreshbwd.com) has lots of information about how you can get involved in cycling and walking in the borough, and lots of case studies to encourage people to get involved:

Case Study 1: We met a couple at our Try-a-Bike event in Corporation Park. Brian, who was an avid mountain bike rider, suffered a stroke and had since been unable to cycle unaided so we advised he use a trike. Since a trike is fairly stable, Brian was able to control the bike using just one side and gain a sense of freedom again as he cycled independently in the park. The couple now attend our weekly Cycle Back to Fitness session on the athletics track with Brian even buying his own trike! Without this session in a part of Blackburn where we have never delivered any cycle training, Brian wouldn't have become aware of our offer.

Case Study 2: Our team have been working with organisations across the Borough to provide Ramblers Wellbeing Walks Training to increase the amount of physical activity provisions that community groups offer. An example of this is our work with West Pennine Slings, who offer a sling library to families to showcase the benefits of slings for parents. West Pennine Slings have now gained National Lottery funding to deliver Ramblers Wellbeing Walks.

The Walk Leader Training we provide is something we are looking to deliver more of to help any organisation become a Ramblers Wellbeing Walks, as well as supporting them to access walks/ physical activity related funding opportunities.

[Blackburn with Darwen Connect (bwdconnect.org.uk)](bwdconnect.org.uk) includes lots of information and resources regarding different ways to travel. It also includes links to consultations about how you can get involved and help shape the future of walking and cycling in the borough, as well as public transport choices and connectivity.

TRAVEL CHOICES

WALKING · CYCLING · BUS · RAIL · CAR SHARING

Anything that reduces emissions can help improve air quality and can have positive impacts on helping to fight climate change and improving the environment. This in turn can improve the quality of life of people within the borough. For example, by not burning solid fuels or having a garden bonfire, less pollution is emitted into the air. The leaflets below

produced by DEFRA ([Air Quality Library - Defra, UK](#)) and the Council ([Pollution | Blackburn with Darwen Borough Council](#)) provide further information.

Switching to electric vehicles or car sharing can also reduce the impact on air quality, in turn improving the health for everyone in the borough. Sites such as www.zap-map.com can help identify charging infrastructure nearby, whereas [bwd-bus-network2- 27-11-22 - London style (bwdconnect.org.uk)](#) can help to quickly identify bus routes:
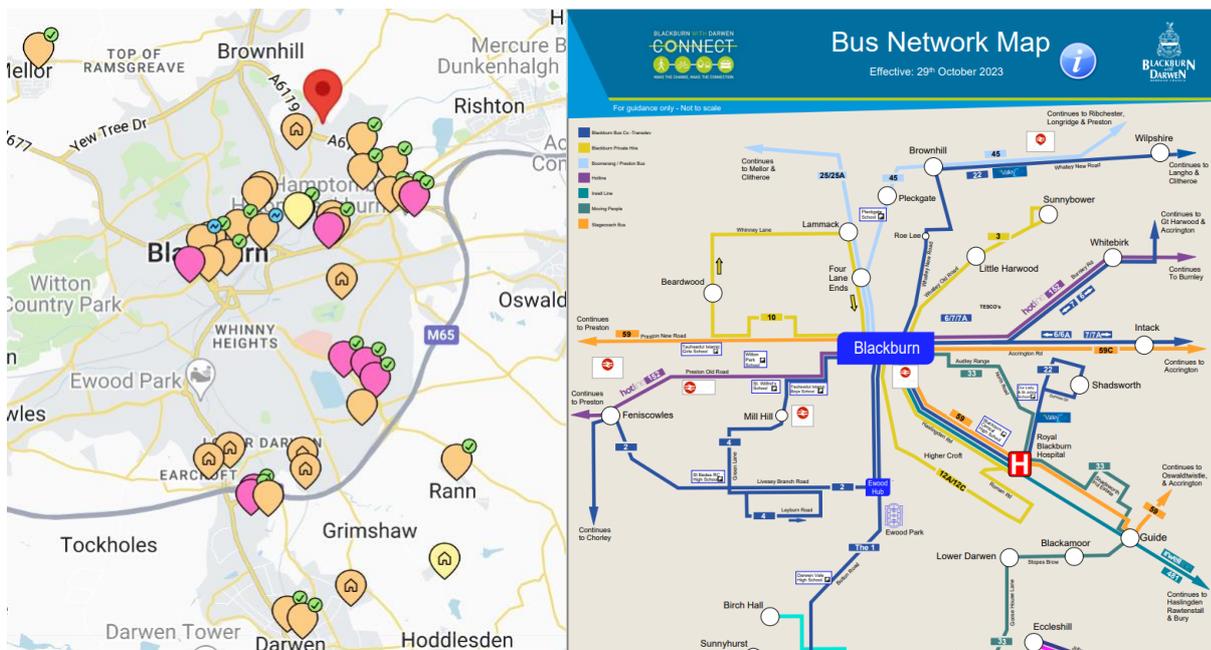
There is also plenty of opportunity to get involved via the climate change website at [What you can do about climate change | Blackburn with Darwen Borough Council](#). However

small the contribution, it all goes to improving air pollution and in turn improving health and wellbeing for everyone in the borough.

Local Responsibilities and Commitment

This report was prepared by the Council's Public Protection Team with support from various Council departments, including the Highways & Transport, Public Health, Leisure and Planning Teams. Input has also been obtained from Lancashire County Council.

This report has been signed off by Blackburn with Darwen Borough Council's Director of Public Health.

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

Address: Public Protection Service, Blackburn with Darwen Borough Council, Davyfield Road Depot, Roman Road Industrial Estate, Blackburn, BB1 2LX

Telephone: 01254 267699

Email: publicprotection@blackburn.gov.uk

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Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Blackburn with Darwen Borough Council (BwDBC) during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Blackburn with Darwen Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

A summary of AQMAs declared by Blackburn with Darwen Borough Council can be found in Table 2.1. The table presents a description of the one remaining AQMA that is currently designated within the Blackburn with Darwen Borough. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean;

We propose to start the consultation process to revoke the Blackamoor AQMA in 2024, having revoked the AQMAs at Intack, Bastwell and Four Lane Ends during the course of 2023 in accordance with the 2022 ASR. Monitoring results over the last seven years have shown consistently that the levels of NO_2 at the Blackamoor AQMA have been below the objective. However, the Council has taken a precautionary approach to the revocation of the AQMA, as a new junction was introduced in 2021 and it has been important to monitor the impact this had on the AQMA before deciding on the next course of action.

In 2017, the highest level of annual average NO2 measured at the Blackamoor AQMA in 2017 was $36.6\mu g/m^3$ at DT39. This has fallen to $27\mu g/m^3$ in 2023 – a fall of 26.2% over six years. The annual average figure for DT39 is the highest monitored annual average result for 2023 at this AQMA, which shows how relatively low the annual average results are at this AQMA. As such, the new junction layout does not appear to have had a detrimental effect on the AQMA.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 6 - Blackamoor	8th February 2012	NO2 Annual Mean	An area encompassing a number of properties at the junction of Roman Road & B6231	NO	41.6	27.0	7 years	Action plan not finalised, but measures identified in this report and details of new link road included in LTP2. This was accepted by DEFRA as part of the 2022 ASR Appraisal	See measures in table 2.2 of this report

✓**Blackburn with Darwen BC confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box).**

✓**Blackburn with Darwen BC confirm that all current AQAPs have been submitted to Defra (confirm by selecting in box).**

2.2 Progress and Impact of Measures to address Air Quality in Blackburn with Darwen Borough Council

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed and provided the information specified in the guidance. Unfortunately, DEFRA noted that some information from table A.1, A.3 and A.5 were missing in the original submission. This has now been rectified and the report accepted by DEFRA. Ratification information in relation to the QA/QC of automatic monitoring was also queried. Again, this has now been rectified in the 2023 ASR.

The appraisal comments from 2023 noted that the Council have provided an in-depth discussion of trends in NO2 concentrations and that the diffusion tube mapping was robust. They also provided the following advice for future submissions which have been summarised below (*comments in italics indicate proposed action to address appraisal advice*):

- It is noted that AQMA 6 is currently not revoked despite having been compliant for seven years as a new junction layout was introduced in 2021. However, it is recommended to include a year in which the Council is considering revoking this AQMA if it has been compliant. If AQMA 6 is compliant in 2022, 2023 and 2024, this AQMA should be revoked. *It is proposed to start the process of consultation regarding the revocation of this AQMA during 2024.*

- The information about the AQMAs in Table 2.1 do not align with the details on the portal in terms of dates. *This has been amended in the current report – dates were taken from the day the Orders were signed, rather than the date the Order came into force. The information on the portal is correct.*

- Table A.4 is missing the data capture for two monitoring locations: DT46 and DT46a. However, DT46 appears not to have recorded any data during 2022. *Diffusion tube locations were changed in order to provide a more robust monitoring network in response to changes in the highway network and to reflect changes in development across the Borough. It is acknowledged that this may cause confusion, and therefore the identification numbering of the relocated tubes will be amended in future years.*

- It is highly recommended to include planned actions and priorities for the next reporting year in future reports. *This has been amended in the current report. In*

particular, plans to convene an Air Quality Steering Group for the Council have already begun with a view to drafting an Air Quality Strategy for the Borough. Links have been made with the Climate Change agenda, and to that end the Air Quality Planning Advisory Note (PAN) will be updated to reflect the priorities of the New Local Plan. Work will begin in 2024 to consult regarding the revocation of AQMA 6.

- It is recommended to include a discussion about the DEFRA background maps and/or the health indicators relating to PM2.5 in future reports. *This is noted and changes made to the current report. During the course of 2023 a new AURN monitoring station was commissioned at Audley Lane in Blackburn to provide urban background data on PM2.5 and ozone. The unit also contains a black carbon monitor. Further details can be found here* Site Information for Blackburn Audley Park(UKA01025) - Defra, UK

- Even though no annualisation and distance correction was required, it is recommended to confirm this within the report. *Noted - has been updated in this report*

- Some of the tables have formatting issues. Please ensure the complete ASR is formatted nicely before publication in future. *Noted.*

- In the trend figures the AQO is labelled as "sum of AQS objective". It is recommended to change the phrasing to "AQS objective" in future reports. *Noted and actioned.*

- Please ensure the right year is referenced throughout the ASR in future. *Noted and actioned.*

Blackburn with Darwen BC has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Thirty-six measures are included within Table 2.2, with the type of measure and the progress Blackburn with Darwen Borough Council have made during the reporting year of 2023 presented in black text. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans, as well as in the Local Plan Local Plan 2021 to 2037 | Blackburn with Darwen Borough Council, the Local Cycling and Walking Infrastructure Plan October 2023 available at BwD LCWIP Phase 3 Prioritisation report final.pdf (blackburn.gov.uk), the Joint Local Health and Wellbeing Strategy 2023-2028 Blackburn-with-Darwen-JLHWS-Final.pdf (blackburn-

darwen.org.uk) and the Climate Emergency Action Plan available at Deliver our Climate Emergency Action Plan | Blackburn with Darwen Borough Council.

Key completed measures are:

- New intelligent traffic light systems at several AQMAs
- Weaver's Wheel - 26km cycle track route encircling Blackburn
- The Pennine Reach project improved bus services on specific routes (£40 million)
- Manchester / Clitheroe train line improvements (£20 million) increasing line capacity
- The new A678/A679 junction at Furthergate, which re-routed traffic away from an AQMA which was later revoked
- A new link road which will remove all traffic from one previously busy arm of the junction at the heart of the Blackamoor AQMA
- Improvements to Haslingden Road corridor to reduce traffic congestion around the hospital and allow greater pedestrian connectivity as well as vehicle connectivity to the M65.
- A range of projects to encourage active travel

Blackburn with Darwen Borough Council expects the following measures to be implemented over the course of the next reporting year:

- The Council prepared a **Bus Service Improvement Plan (BSIP)** jointly with LCC in October 2021 setting out their priorities etc. Following this submission, the Council has been allocated £4.66m of BSIP funding for 2022-25 to improve bus services, bus subsidies and new routes. It is expected that these improvements will begin to be implemented over the coming year and will continue throughout 2024-5.
- **The Climate Emergency Action Plan (CEAP)** was updated in July 2023 and is a high priority thread which runs throughout the Councils work. **A Climate Impacts Framework SPD** has also been drafted and is expected to be formalised during the course of the year. The priorities of tackling climate change, and the tools with which to do this, are closely linked to actions to address poor air quality. For example, the Borough aims to be carbon neutral by 2030, and therefore the Climate Impacts Framework SPD will link into the Air Quality PAN and vice versa. This should help strengthen the air quality mitigation via the planning process.
- **The LCWIP Phase 3 report** was approved by the Council's Exec Board on 7th Dec 2023 and prioritises the walking and cycling routes identified at the network planning stage towards delivery of a comprehensive and cohesive active travel

network for Blackburn with Darwen. It is expected that the measures identified within the plan will begin to come into fruition throughout the course of the coming year.

- **The new Local Plan** was finalised in 2023 and was adopted in January 2024. The Local Plan places a strong emphasis on active travel and sustainability, and therefore through the planning process it is anticipated that active travel infrastructure will be developed over the coming years.

- **The Joint Local Health and Wellbeing Strategy** was adopted in 2023. This new strategy details the priorities and approach to 2028. These include actions to address healthy homes, places and communities. Air pollution is considered within this priority, along with an increase in active travel. This again feeds into the other active travel measures that are highlighted above.

- **Seven electric vehicles** were purchased by the Council in 2023, with a further nine due to be delivered in 2024. Altogether in 2023, 23 EVCPs were available to the public across the borough, with another 55 being proposed at the time of reporting within an upgraded multi storey car park in Blackburn town centre. This work is, in part, driven by the climate change emergency action plan and the Boroughs aim to be carbon neutral by 2030.

- **The Air Quality PAN** will be updated in 2024 to reflect the new Local Plan and to complement the Local Cycling and Walking Infrastructure Plan as well as the Climate Impacts Framework SPD in order to provide consistency across the Council and to support the work of the various Departments in prioritising sustainable development.

- A policy to reflect the changes to **Smoke Control Area enforcement** is expected to be drafted this year. Work has already begun to establish the extent to which the Smoke Control Area Orders are being complied with through proactive overt surveillance throughout the borough to assess which areas might need further education regarding the Smoke Control Areas.

- The establishment of an Air Quality Steering group to begin work on a Borough wide **Air Quality Strategy** as per TG.22. Initial work has already established a format for the group and identified relevant stakeholders. Training courses have been attended in early 2024 to focus the steering group and content of the Strategy and links have been made with appropriate personnel in Public Health.

Blackburn with Darwen Borough Council's priorities for the coming year are:

1. To start the process of revoking AQMA 6: Blackamoor
2. To update the Air Quality PAN and bring it in line with the new Local Plan and associated policies.
3. To establish a steering group for air quality and begin the process of drafting an Air Quality Strategy for the borough
4. To improve bus services in the borough
5. To improve active travel infrastructure
6. To draft a Smoke Control Area enforcement policy

As above, it is likely that the Blackamoor AQMA will be revoked in the near future, once the impact of the new road layout has been evaluated.

However, even when all of our AQMAs have been revoked, air quality will remain an issue. There is no clear evidence of a safe level of exposure below which there is no risk of adverse health effects[13], so Blackburn with Darwen Borough Council will continue to work with partner organisations including Defra, the Environment Agency, Public Health, and Lancashire County Council to deliver action measures in pursuit of better air quality including those summarised above and in table 2.2.

The principal challenges and barriers to implementation of these measures that Blackburn with Darwen Borough Council anticipates are resource issues and competing priorities of development management, in addition to maintaining the profile of air quality in the borough. It is hoped that by aligning the updated AQ PAN with the priorities of the Climate Emergency Action Plan and the new Local Plan (including the climate impacts framework SPD) then the profile of air quality within the borough will be recognised alongside climate change.

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[13] https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Link Road, Blackamoor	Transport Planning and Infrastructure	Other	2016	2021	BwDBC	Part of Growth Deal 3 "Pennine Gateways" project	NO	Funded	£1 million - £10 million	Implementation	Beneficial to Negligible impact at various modelled receptors within	NO2 exposure below annual objectives (measured by AQMA diffusion tubes)	Completed	To mitigate impact anticipated growth in traffic at AQMA junction. One arm of a busy 4 arm crossroads at heart of AQMA will become a dead-end, thereby reducing congestion
2	Pennine Reach	Transport Planning and Infrastructure	Bus route improvements	2011	2016	BwBDC, Lancs County Council	£40m - BwDBC & Lancashire county Council, DfT Funding	NO	Funded	> £10 million	Completed	Findings of monitoring and evaluation report include:		Completed August 2016	Mixed reaction from residents/local politicians - Some positive, others see bus lanes as contributing to slower car journeys
3	Maximise Signal Efficiency	Traffic Management	Other	2018	2019	BwDBC	LTP Funding. Growth Deal 3	NO	Funded	£100k - £500k	Completed	New Blackamoor road layout in 2021, so spend on evaluation not considered appropriate.	New signal system at Blackamoor, Four Lane Ends, and junctions on A6119 at Pleckgate Rd, Brownhill, Whalley Old Road	Last system to be updated at Pleckgate. All completed by 2019.	Impact of COVID lockdown on traffic flows, so the effectiveness of the new system at Pleckgate won't become apparent until traffic has returned to the 'new normal'
4	Development Control	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2018	2019	BwDBC, Developers	BwDBC	NO	Funded	£10k - 50k	Implementation	No estimate available	Implementation of Supplementary Planning Document - since amended	Planning Advisory Note completed July 2018 and in use	SPD not considered appropriate, Planning Advisory Note (PAN) implemented.
5	Control of Bonfire and Chimney Emissions	Other	Other	2018	2019	BwDBC, Public	BwDBC	NO	Funded	< £10k	Implementation	No estimate available	Compliance with legislation and good practice	Responded to 161 fire related complaints in 2021	
6	Control of Industrial Emissions	Environmental Permits	Other measure through permit systems and	2018	2019	BwDBC, Local Industry	BwDBC	NO	Funded	< £10k	Implementation	BAT - not quantified	Compliance with Defra inspection regime	All installations inspected in	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
			economic instruments												accordance with Defra regime
7	Car Sharing - Shared wheels	Alternatives to private vehicle use	Car & lift sharing schemes	2011	2022	Lancashire Authorities	DfT Capability Fund (2021-2022)	NO	Funded	£10k - 50k	Implementation	No estimate available	Number of members	156 BwDBC members, a total of 4230 members Lancashire wide	Uptake has been adversely affected by COVID pandemic. Due to low numbers of people registering to Lancashire liftshare platform, the option of developing an internal Blackburn with Darwen Council internal system is being considered. Our partnership with Liftshare will be reviewed in August 2022.
8	Weaver's Wheel - 26km cycle track route encircling Blackburn	Alternatives to private vehicle use	Promotion of walking and cycling	2015	2020	BwDBC , Public	£600k for Weaver's Wheel. Additional £50k 2018/19 & 19/20 for network improvements, maintenance £30k/yr	NO	Funded	£50k - £100k	Implementation	No estimate available	26km of cycle track completed plus extra spurs	Blackburn with Darwen Cycle App - As of December 2021 the number of users stands at 430 (142 beginner cyclists, 255 intermediate cyclists 57 as advanced, 33 did not respond).	
9	Adult Cycle Training	Promoting Travel Alternatives	Promotion of cycling and cycle safety	2011	2022	BwDBC and Go Velo	DfT Capability Fund (2021-2022)	NO	Funded	£17k	Implementation	No estimate available	Number of participants – Target 700	122 participants	Event delivery hit by COVID. Active travel promotion is an established part of Public Health improvement initiatives and is embedded within the Health and Well-being Strategy.
10	Family Cycle Training	Promoting Travel Alternatives	Promotion of cycling and cycle safety	2021	2022	Go Velo	DfT Capability Fund (2021-2022)	NO	Funded	£24k	Implementation	No estimate available	Number of participants – Target 300	169 participants	Continuation dependant on future DfT revenue funds

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
11	Conventional and Electric Bike Hire	Promoting Travel Alternatives	Promotion of cycling	2021	2022	I-Cycle Electric	DfT Capability Fund (2021-2022)	NO	Funded	£28k	Implementation	No estimate available	Number of Hires – Target 400	0 hires	Continuation dependant on future DfT revenue funds
12	Try a Bike Events	Promoting Travel Alternatives	Promotion of cycling	2021	2022	BwDBC and I-Cycle Electric	DfT Capability Fund (2021-2022)	NO	Funded	7500	Implementation	No estimate available	Number of events – 30 events	10 events	Continuation dependant on future DfT revenue funds
13	Dr Bike Events	Promoting Travel Alternatives	Promotion of cycling and cycle safety	2021	2022	Cotton Town Bikes and Cycle Roots	DfT Capability Fund (2021-2022)	NO	Funded	£23k	Implementation	No estimate available	Number of events – 20 events	4 events	Continuation dependant on future DfT revenue funds
14	Personal Travel Planning	Promoting Travel Alternatives	Personalised Travel Planning	2011	2022	BwDBC, Hospital, Public	DfT Capability Fund (2021-2022)	NO	Funded	£10k - 50k	Implementation	No estimate available	No. personal plans	2 PTPs delivered in 2021	This service has been adversely affected due to the pandemic plus there are now numerous apps and websites that conduct personal travel plans
15	Learn to Ride Course	Promoting Travel alternatives	Promotion of Cycling	2021	2022	BwDBC Re:fresh Health and Wellbeing Team	Access Fund / Capability Fund	No	Funded	£10k - 50k	Completed		Participation	25 courses totalling 45 participants	Figures are from April 2021-March 2022
16	Led Ride/Cycle back to fitness	Promoting Travel alternatives	Promotion of Cycling	2021	2022	BwDBC Re:fresh Health and Wellbeing Team	Access Fund / Capability Fund	No	Funded	£10k - 50k	Completed		Participation	464	Figures are from April 2021-March 2022
17	Local Cycling and Walking Infrastructure Plan (LCWIP) development	Cycling and Walking infrastructure planning	Promotion of Active Travel	2021	2022	BwDBC and External Contractor	DfT Capability Fund (2021-2022)	NO	Funded	£40K	In development	No estimate available	Cycling and walking network plans	Project in early stages	
18	Led Walks	Promoting Travel Alternatives	Promotion of walking	2011	2022 - unless future DfT capability funding becomes available	BWDBC, Public	DfT Capability Fund (2021-2022)	NO	Funded	£2k	Implementation	No estimate available	3560 participants	Total of 1115 participants on the led walk programme	Continuation dependant on future DfT revenue funds
19	Other walking initiatives	Promoting Travel Alternatives	Promotion of walking	2021	2022	BwDBC Re:fresh Health and Wellbeing Team	Access Fund / Capability Fund	No	Funded	£10k - 50k	Completed		Participation	Walking workouts – 315 attendees/ health walks - 3560 attendees	Figures from April 2021 to April 2022
20	School travel plans	Promoting Travel Alternatives	School Travel Plans	2021	2022	BwDBC, School	DfT Capability Fund (2021-2022)	NO	Funded	Part of School Grant Package	Aborted	No estimate available	Target – 10 travel plans	As of February 2022 - committed to	Targeting schools that are either close to existing or

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
														the writing of three Travel Plans	proposed cycling and walking infrastructure
21	Quality Bus Shelters	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2018	2021	BwDBC	£290K BwDBC	NO	Funded	£100k - £500k	Completed	No estimate available	Completed quality bus shelters	Upgraded shelters from Blackburn centre to Guide (bus routes 481/22)	Upgrades on Preston New Road to follow (Route X59)
22	Business Travel Plans	Promoting Travel Alternatives	Business Travel Planning	2021	2022	BwDBC	DfT Capability Fund (2021-2022)	NO	Funded	Part of Business Grant Package	Implementation	No estimate available	Number of Plans written – Target 5	0 Travel Plans	Continuation dependant on future DfT revenue funds
23	School Grants	Promoting Travel Alternatives	Grant Scheme	2021	2022	BwDBC	DfT Capability Fund (2021-2022)	NO	Funded	£25K	Implementation	No estimate available	Number of grants delivered – 10 grants	5 grants	Continuation dependant on future DfT revenue funds
24	Business Grants	Promoting Travel Alternatives	Grant Scheme	2021	2022	BwDBC	DfT Capability Fund (2021-2022)	NO	Funded	£25K	Implementation	No estimate available	Number of grants delivered – Target 5 Grants	2 grants	Continuation dependant on future DfT revenue funds
25	School Travel Challenges	Promoting Travel Alternatives	Promotion of Active Travel	2021	2022	BwDBC	DfT Capability Fund (2021-2022)	NO	Funded	£7K	Implementation	No estimate available	Number of student participants – Target 1200	1933 students	6 Schools were engaged, these being:
26	More segregated cycle/walking lanes	Alternatives to private vehicle use	Promotion of walking and cycling	2021	2022	BwDBC	Active Travel Fund	NO	Funded	Tranche 1 £77,000 Tranche 2 £292,600	Implementation	No estimate available	Completion of out and back improvements to Route 6, and North Blackburn Ride and Stride	Tranche 1 complete - improved National Cycle Route 6 from Witton Park to Blackburn Town Centre	
27	More & improved segregated cycle/walking lanes	Promoting Travel Alternatives	Promotion of walking	2023	2025	BwDBC	Levelling Up Fund	NO	Funded		Implementation	No estimate available	Completion of improvements to around 17km of walking/cycling routes across SE Blackburn focussed on the RBH	Funding committed - work to start in 2024	
28	More & improved segregated cycle/walking lanes	Promoting Travel Alternatives	Promotion of cycling	2023	2030	BwDBC	Active Travel Fund/Local Transport Fund 2025-2032	NO	Funded		Planning	No estimate available	Completion of improvements to the Leeds-Liverpool canal corridor	6 improvement areas identified & at detailed design stage	No current funding commitment beyond design development stage
29	More & improved segregated cycle/walking lanes	Promoting Travel Alternatives	Promotion of cycling	2023	2030	BwDBC	Feasibility Study Underway	NO	Not Funded		Planning	No estimate available	Completion of high priority LCWIP route linking NCN Route 6 and L&L Canal with Blackburn College and Blackburn Town Centre	Feasibility study underway	No funding commitment

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
30	Bus Service Improvement Plan	Alternatives to private vehicle use	Other	2023	2025	BwDBC & LCC	BSIP funding for 2022-25	NO	Funded	£1 million - £10 million	Implementation	No estimate available	Upgrading signalised junctions, introduction of new circular route, cheaper fares, multi- operator tickets, bus service enhancements	Service improvements delivered for services 2, 4, 22 & 33	Further improvements proposed linking sheltered accommodation with blackburn town centre, commission study into bus service demand in and around Darwen, and continued funding of existing improvements
31	Development Control	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2024	BwDBC	BwDBC	NO	Funded	£10k - 50k	Implementation	No estimate available	Costed/Measurable/Verified Mitigation	Reviewed 21 AQ reports in relation to Planning in 2023	Additional Mitigation totalling at least £424 535 proposed
32	Control of Bonfire and Chimney Emissions	Other	Other	2023	2024	BwDBC	BwDBC	NO	Funded	£10k - 50k	Implementation	No estimate available	Compliance with legislation and good practice	Responded to ?? fire related complaints in 2023	
33	Control of Industrial Emissions	Environmental Permits	Other measure through permit systems and economic instruments	2023	2024	BwDBC	BwDBC	NO	Funded	£10k - 50k	Implementation	BAT - not quantified	Compliance with Defra inspection regime	All installations inspected in accordance with Defra regime	
34	Development Management	Policy Guidance and Development Control	Other policy	2023	2037	BwDBC	BwDBC	NO	Funded	£500k - £1 million	Implementation	No estimate available	Implementation of Supplementary Planning Document & updated AQ PAN	Adopted in 2023	
35	Encourage the use of electric vehicles by providing public charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2024	BwDBC	BwDBC	NO	Funded	£100k - £500k	Implementation	No estimate available	Measure calculated miles powered through each EV CP	installed 10 in 2018 with a further 55 points planned in public car parks	
36	Reduce Council emissions by purchasing EV's and providing EV CPs at council buildings	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2022	2024	BwDBC	BWDBC	NO	Funded	£50k - £100k	Implementation	No estimate available	Number of EV's owned and/or leased by the Council	7 electric vehicles purchased in 2023 with a further 9 to be received in 2024	

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[14], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM$_{2.5}$)). There is clear evidence that PM$_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Within Blackburn with Darwen, data taken from the Public Health Outcomes Framework Public Health Outcomes Framework - Data - OHID (phe.org.uk) for the period covering the year 2022 estimates that the fraction of mortality attributable to particulate air pollution is 5.2% within the borough. This is the fourth lowest estimate for the north-west region as a whole, and is below the national (England) average value of 5.8%. However, clearly more work can be done to reduce this figure further. To that end, Blackburn with Darwen Borough Council is taking the following measures to address PM$_{2.5}$:

A new AURN site has been established within the borough at Audley Lane. The site was commissioned in September 2023. The site is known as Audley Park for the purpose of the network. It contains an ozone monitor (API T400 with NumaView) and a particulate monitor (FIDAS). It also houses a black carbon monitor (Aethalometer model AE33) and is part of the Black Carbon network. Blackburn with Darwen Borough Council have retained the LSO duties for the site for all of the monitors, including the Aethalometer.

In addition to the above, the following actions and policies have been implemented and/or planned in order to address a number of issues, including particulate air pollution:

Active Travel Infrastructure (Table 2.2 Measures 27-29):

- Blackburn with Darwen Borough Council have been successful in receiving two rounds of funding Tranche 1 £77,000 and Tranche 2 £292,600 from the 'Active Travel Fund' to support pop–up and more permanent segregated cycle/walking lanes. This was previously reported in the 2022 ASR. As a result of the funding, two schemes were completed: the North Blackburn Stride and Ride scheme which

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

involved the installation of a new shared pedestrian and cycleway along the A6119; and the Blackburn Stride and Ride Phase 2 which connected Blackburn Town Centre to Witton Park via a segregated cycleway along the A674 Preston Old Road and A6447 Buncer Lane, ultimately joining up with NCR6. This part of the scheme cost £167,370.

- The LCWIP Phase 3 report was approved by the Council's Exec Board on 7th Dec 2023 and prioritises the walking and cycling routes identified at the network planning stage towards delivery of a comprehensive and cohesive active travel network for Blackburn with Darwen. Details can be found at BwD LCWIP Phase 3 Prioritisation report final.pdf (blackburn.gov.uk). High Priority Routes currently being progressed include:

  o **Southeast Blackburn Active Travel Network** – Around 17km of routes being improved for walking and cycling across SE Blackburn focused on the Royal Blackburn Hospital (RBH). Funding is committed through Levelling Up Fund with completion by December 2025.

  o **The Leeds & Liverpool Canal corridor** - Identified as an early priority for further development with opportunities to improve access and connectivity. Several of the schemes identified are currently going through detailed design in anticipation of future funding being identified. These include:

    ▪ *Whitebirk Drive / Philips Road*: Introduction of crossing facilities at the junction for pedestrians and cyclists along with improvements to footways for shared use provision in line with LTN1/20 standards connecting to Weavers Wheel.

    ▪ *Red Lion Roundabout*: New and improved crossing facilities at the junction for pedestrians and cyclists along with improvements to footways for shared use provision in line with LTN1/20 standards, connecting to Weavers Wheel and Leeds & Liverpool (L&L) Canal.

    ▪ *Eanam Old Road*: Improved connection to L&L Canal from Eanam Old Road and improved linkage to Eanam/Salford linking to NCN Route 6.

    ▪ *Blakewater Road Link*: Improvements to widen existing footpath for shared use connecting Blakewater Road to L&L Canal

- *A666 Bolton Road*: New controlled crossing on route of canal towpath. Canal towpath users are currently required to walk to the A666 Bolton Road / Infirmary Road junction to cross safely - a deviation of 170m.

- *Highfield Road*: New crossing on route of canal towpath. There is currently no formal crossing provision although all canal towpath users are required to cross Highfield Road as no alternative.

- **Barbara Castle Way Priority Route** – Identified as a high priority LCWIP route linking NCN Route 6 and Leeds and Liverpool Canal with Blackburn College and Blackburn Town Centre. A Feasibility Study is underway to identify proposals etc.

Active Travel Initiatives & Policies:

- Clean Air Day 2023 was launched on 15th June 2023. The theme for this year's Clean Air Day was the impact air quality can have on mental health. The aim was to raise awareness of this issue and encourage residents across Blackburn with Darwen to leave their vehicles at home, go outdoors and enjoy nature whilst visiting our green spaces. Two trails were created across the two towns and are located in Witton Park and Bold Venture Park. The trails comprise of emoji signs that highlight the benefits of clean air for mental health and well-being, using quotes, facts and QR codes for further links to resources. Further details can be found here Clean Air Trail - Be Well BWD. Three primary schools came to walk the trails on the day, and at the launch of the initiative there were 93 views on the site. The trails are expected to become permanent fixtures in the parks, with access to the Be Well Clean Air site being monitored via the QR code being scanned.

- **The Joint Local Health & Wellbeing Strategy 2023-2028** was adopted in 2023. Blackburn with Darwen's Health and Wellbeing Board brings together leaders from across the local health, social care and the wider system. A specific function of the Health and Wellbeing Board is to produce a Joint Local Health and Wellbeing Strategy (JLHWS) which details the shared priorities and approach to improving health and wellbeing and reducing health inequalities, over the coming years. This new strategy details the priorities and approach to 2028. These include actions to address healthy homes, places and communities. Air pollution is considered within this priority, along with an increase in active travel. Further details can be found at Blackburn-with-Darwen-JLHWS-2328-FINAL.pdf (bewellbwd.com)

- **Walking and Cycling Initiatives** continue to run through the Neighbourhoods, Wellbeing and Prevention teams in conjunction with Public Health. Throughout the course of 2023, the following participation in the various programmes was recorded:

	Guided Walks (Active Outdoors Programme)	Cycle Sessions* (Weekly re:fresh)	Adult Cycle Training (External funding/Additional provisions)	Active Travel Workshops (External funding)	Walk Leader Training
Total No. of Events or Sessions:	244	94	14	1	6
Total No. of Participants:	2120	656**	37	8	36

*Sessions did not run from Nov 23 – Mar 24 due to Active Outdoors Hub renovations

** Accounts for throughput, not unique participants

Development Management & Air Quality (Table 2.2 Measures 31 & 34)

- The new Local Plan was finalised in 2023 and was adopted in January 2024. The Local Plan places a strong emphasis on active travel and sustainability. Core Policy 3: Health & Well Being encompasses these elements of active travel and improvements in air quality as well as Core Policy 6: The Natural Environment. To this end, the Blackburn with Darwen Air Quality Planning Advisory Note (2018), which is referenced within the Local Plan, requires updating to reflect the ambitions of the Local Plan. Further details can be accessed at Blackburn-with-Darwen-Local-Plan-2021-2037.pdf (blackburn-darwen.org.uk). Progress on the updates to the PAN will be reported in next years' ASR.

- **The Climate Emergency Action Plan (CEAP)** was updated in July 2023 and is a high priority thread which runs throughout the Councils work. Within the Local Plan, climate change and the climate emergency are mentioned 103 times, highlighting the ambitions and importance which is attached to tackling and adapting to climate change. Core Policy 5: Climate Change provides further details regarding the scope

of the ambitions in terms of climate change and development. A Climate Impacts Framework SPD has also been drafted. The priorities of tackling climate change, and the tools with which to do this, are closely linked to actions to address poor air quality. For example, the Borough aims to be carbon neutral by 2030. To this end, DM Policy 12: Clean and Green Energy will also have a positive impact on air quality. In 2024, our aim is to make further links with the Climate Change agenda in order to raise the profile of air quality within the borough, and to work collaboratively with the various stakeholders involved in pushing forward the climate change agenda to start to formulate an Air Quality Strategy and Air Quality steering group for the borough. This will be updated in next years' ASR.

Sustainable/Low Emission Transport (Table 2.2 Measure 30, 35 & 36):

- Seven electric vehicles were purchased by the Council in 2023, with a further nine due to be delivered in 2024. The Council installed 10 electric vehicle charging points (EVCPs) in nine public car parks between 2018 and 2020. In 2023 some 240,769 miles were powered by the points[15], with 297 unique drivers accessing them in 2023[16]. One charge point was installed at Councils Davyfield Road Depot in 2022. In 2023 another 11,079 miles were powered through this, whilst four more EVCPs were installed at the Davyfield Road Depot in 2023. Altogether in 2023, 23 EVCPs were available to the public across the borough, with another 55 being proposed within an upgraded multi storey car park in Blackburn town centre.

- The Council prepared a Bus Service Improvement Plan (BSIP) jointly with LCC in October 2021 setting out their priorities etc. Following this submission, the Council has been allocated £4.66m of BSIP funding for 2022-25. This is going towards improvements to bus services and infrastructure as follows:

  o Bus service enhancements

  o Continuation of bus subsidies

  o Simpler cheaper fares

  o Development of a multi-operator ticket

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[15] the number of miles is calculated using Defra guidance of 2.93 miles per kWh

[16] according to the Swarco dashboard

o Bus priority measures (primarily upgrade to signalised junctions to include bus detection)

o The introduction of a new 'Blackburn Circular' bus route.

o Feasibility studies to further improve the bus route network and to consider potential for demand responsive services

In terms of **Table 2.2 Measure 32**, work is underway to draft an enforcement policy for the Smoke Control Areas (SCA) in accordance with the changes to the statutory guidance. A number of officers have attended training regarding the updated statutory guidance and proactive visits have been undertaken out of normal office hours to try and ascertain the level of current compliance with the SCA.

During the course of 2023, the following actions were taken regarding SCA compliance and dust/particulate pollution:

- 117 incidences of smoke and dust related complaints were received throughout 2023. Fifty-five visits were made in order to witness smoke complaints. These can be further broken down as follows:
  - Eleven related to domestic chimney smoke. In most cases, the resident was contacted and given advice on the SCA and how to comply.
  - Over thirty cases related to garden/domestic bonfires. Again, generally advice and education were provided. However, in some cases more formal action was taken – thirty-four warning letters were issued regarding domestic burning and four Community Protection Warnings (CPW) were served.
  - Twenty-two commercial burning cases were received, with an additional two cable burning cases. Fourteen warning letters were issued regarding commercial bonfires.
  - Two complaints were dealt with relating to smoke from a stack at a commercial premises and two related to sandblasting.
  - Of the remainder, most related to undefined odour which could not be classified further.

Similarly, in relation to **Table 2.2 measure 33**, this Section proactively inspects permitted process under the Environmental Permitting Regulations. Additionally, controls are placed on dust emissions from new development through the planning regime. In 2023, 25 inspections of permitted processes (including crushers, screens and concrete batchers) were undertaken. In addition, 404 planning applications were reviewed, with any major

applications subject to a construction and environmental management plan (CEMP) including dust control.

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

This section sets out the monitoring undertaken within 2023 by Blackburn with Darwen Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Blackburn with Darwen Borough Council undertook automatic (continuous) monitoring at one site during the full calendar year 2023. Automatic (continuous) monitoring was also undertaken from September 2023 at a separate automatic monitoring site.

Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. Automatic monitoring results for Blackburn with Darwen are available through the UK-Air website Home - Defra, UK.

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

3.1.2 Non-Automatic Monitoring Sites

Blackburn with Darwen Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 46 sites during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO$_2$)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO$_2$ annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO$_2$ hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

In 2023 there were no exceedances of the NO$_2$ air quality objectives at any of the monitoring sites, many of which are located at receptors close to busy junctions. There hasn't been an exceedance at any of the monitoring sites since 2017.

As a result of the revocation of three AQMAs in 2023, a number of diffusion tubes are proposed to be relocated in 2024 in order to assess concentrations at a number of junctions were previously resource issues meant monitoring could not be undertaken. In particular, areas where significant development is proposed or underway, and/or road layout changes are proposed will be targeted.

3.2.2 Particulate Matter (PM$_{10}$)

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

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

The Audley Park (Lane) AURN monitoring site collects data in relation to particulate matter, ozone and black carbon. The site has been collecting data since 1st September 2023, and therefore only 33% valid data capture for 2023 has been possible. As such, some annualisation of the data was required. This is described in further detail in Appendix C.

Once the data has been annualised in accordance with LAQM.TG22, the figures demonstrate that for 2023 there are no exceedances of the air quality objectives for PM10. Similarly, the daily mean concentration has not exceeded the air quality objective of 50µg/m^3 during the monitoring period. Given the limited data collected, the 90.4th percentile of the 24-hour mean has been calculated in accordance with LAQM.TG22. This gave a figure of 21µg/m^3, significantly below the daily mean objective.

3.2.3 Particulate Matter (PM$_{2.5}$)

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

As above, the Audley Park AURN was commissioned in September 2023, and has therefore only been collecting data since 1st September 2023. As such, there is only a 33% data capture for 2023. This is sufficient to provide some meaningful data as is above the 25% threshold for data capture (particularly given the 99.9% data capture for the period of operation), but only after annualisation has been undertaken on the data.

Based on the annualised results, an annual mean PM$_{2.5}$ figure of 7µg/m^3 has been derived. This is in line with the annual mean data from similar urban background sites within the north-west region which were used within the annualisation process. Specifically, the result was slightly lower than the urban background annual means from

nearby sites, but in-line with the rural background annual mean used within the annualisation.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Inlet Height (m)
CM1	Blackburn Accrington Road	Roadside	370241	428026	NO2	NO	Chemiluminescence	17.8	3.2	3
CM2	Blackburn Audley Park	Urban Background	369242	427919	O3, PM10, PM2.5	NO	UV Absorption, FIDAS	19.8	5.5	1.8

Notes:

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

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT1	14 St Helier Close	Urban Background	367034	425946	NO2	Not in AQMA	2.0	n/a	No	3.0
DT2	2 Gib Lane	Roadside	367135	425923	NO2	Not in AQMA	8.0	2.2	No	3.0
DT3	149 Livesey Branch Rd	Roadside	367153	425915	NO2	Not in AQMA	0.0	3.0	No	3.0
DT4	238 Blackamoor Road	Roadside	370492	425781	NO2	Not in AQMA	0.0	7.8	No	3.0
DT5	283 Haslingden Road	Kerbside	370486	425892	NO2	Not in AQMA	6.4	0.5	No	3.0
DT6	St Edwards School, Blackburn Rd, Darwen	Roadside	368298	423985	NO2	Not in AQMA	0.0	2.4	No	3.0
DT7	170 Accrington Road	Roadside	370386	427973	NO2	Not in AQMA	0.0	4.0	No	3.0
DT8	11-13 Bolton Road, Darwen	Roadside	369253	422103	NO2	Not in AQMA	No exposure	1.8	No	3.0
DT9	15 Shadsworth Road	Roadside	370826	427962	NO2	Not in AQMA	0.0	2.3	No	3.0
DT10	306 Accrington Road	Roadside	370818	428020	NO2	Not in AQMA	0.0	2.5	No	3.0
DT11	93 Sudell Road, Darwen	Roadside	370758	428004	NO2	Not in AQMA	2.7	0.6	No	3.0
DT12	16 Whitebirk Road	Roadside	370836	428130	NO2	Not in AQMA	0.0	5.2	No	3.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT13	39 Peronne Crescent	Urban Background	370908	428217	NO2	Not in AQMA	7.4	n/a	No	3.0
DT14	217 Haslingden Road	Roadside	369941	428054	NO2	Not in AQMA	0.0	7.1	No	3.0
DT15	114 Whalley New Road	Roadside	369026	429180	NO2	Not in AQMA	0.0	2.2	No	3.0
DT16	255 Whalley Range	Roadside	368964	429168	NO2	Not in AQMA	0.0	2.5	No	3.0
DT17	86 Whalley New Road	Roadside	368981	429090	NO2	Not in AQMA	0.0	2.4	No	3.0
DT18	9 Palm Street	Urban Background	369049	429064	NO2	Not in AQMA	6.9	n/a	No	3.0
DT19	64 Emerald Avenue	Kerbside	369074	429152	NO2	Not in AQMA	11.2	0.0	No	3.0
DT20	33 Bolton Road	Roadside	369259	422050	NO2	Not in AQMA	0.0	2.9	No	3.0
DT21	730 Preston Old Rd, Feniscowles	Roadside	364510	425687	NO2	Not in AQMA	0.0	1.8	No	3.0
DT22	15 Tudor Close	Urban Background	369157	422494	NO2	Not in AQMA	3.7	n/a	No	3.0
DT23	Hawkshead Close	Urban Background	366879	427604	NO2	Not in AQMA	4.0	n/a	No	3.0
DT24	57 Darwen Street, Blackburn	Kerbside	368295	427816	NO2	Not in AQMA	2.7	0.4	No	3.0
DT25	183 Redlam	Roadside	366652	427281	NO2	Not in AQMA	0.0	2.6	No	3.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT26	742 Whalley Old Road, Brownhill	Roadside	368959	430708	NO2	Not in AQMA	3.8	3.2	No	3.0
DT27	Pot House Lane	Roadside	370188	423058	NO2	Not in AQMA	0.0	1.5	No	3.0
DT28	Knowle Lane, Chapels	Roadside	369438	423251	NO2	Not in AQMA	0.0	2.0	No	3.0
DT29	639 Blackburn Road	Roadside	368170	424617	NO2	Not in AQMA	0.0	4.8	No	3.0
DT30	179 Accrington Road	Roadside	370335	427988	NO2	Not in AQMA	0.0	3.0	No	3.0
DT31	145 Blackburn Road	Roadside	368552	423366	NO2	Not in AQMA	0.0	4.0	No	3.0
DT32	7 Bolton Rd	Roadside	369252	422131	NO2	Not in AQMA	No exposure	2.1	No	3.0
DT33	555 Blackburn Road	Roadside	368231	424376	NO2	Not in AQMA	0.0	3.9	No	3.0
DT34	486 Blackburn Road	Roadside	368240	424299	NO2	Not in AQMA	0.0	6.5	No	3.0
DT36	9 View Road	Urban Background	368371	424195	NO2	Not in AQMA	4.6	n/a	No	3.0
DT37	26 Pickering Fold	Urban Background	369789	425346	NO2	Not in AQMA	7.0	n/a	No	3.0
DT38	2 Blackamoor Road	Roadside	369650	425374	NO2	AQMA 6	0.0	1.0	No	3.0
DT39	138 Roman Road	Roadside	369615	425371	NO2	AQMA 6	2.0	0.5	No	3.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT40	161 Roman Road	Roadside	369634	425359	NO2	AQMA 6	0.0	4.0	No	3.0
DT41	113 Stopes Brow	Kerbside	369591	425360	NO2	AQMA 6	0.0	0.6	No	3.0
DT42	535 Revidge Road	Roadside	367904	429576	NO2	Not in AQMA	0.0	3.6	No	3.0
DT43	254 Shear Brow	Roadside	367934	429582	NO2	Not in AQMA	0.0	1.0	No	3.0
DT44	Rhodes Avenue	Urban Background	367992	429697	NO2	Not in AQMA	9.0	n/a	No	3.0
DT45	331 Shear Brow	Roadside	367924	429561	NO2	Not in AQMA	0.0	1.7	No	3.0
DT46	Roman Road by Issa Way	Roadside	369526	425572	NO2	Not in AQMA	7.2	1.5	No	3.0
DT47, DT48, DT49	Accrington Rd AURN	Roadside	370241	428026	NO2	Not in AQMA	17.8	3.2	Yes	3.0

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO$_2$ Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	370241	428026	Roadside	100	100	20.2	17.2	19.4	19.7	16.4

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

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

✓ **Where exceedances of the NO$_2$ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.**

Notes:

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

Exceedances of the NO$_2$ annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
DT1	367034	425946	Urban Background	100	100.0	14.0	12.2	13.1	12.1	10.5
DT2	367135	425923	Roadside	100	100.0	███████	███████	███████	20.4	11.8
DT3	367153	425915	Roadside	100	100.0	33.4	29.2	27.7	26.2	24.2
DT4	370492	425781	Roadside	100	100.0	21.5	18.4	19.0	18.3	16.8
DT5	370486	425892	Kerbside	100	100.0	███████	███████	27.1	27.3	24.3
DT6	368298	423985	Roadside	100	100.0	20.9	18.0	18.0	17.5	15.3
DT7	370386	427973	Roadside	100	100.0	29.4	26.0	29.0	29.1	25.8
DT8	369253	422103	Roadside	100	100.0	32.3	29.5	30.4	30.1	27.3
DT9	370826	427962	Roadside	100	100.0	25.5	24.0	24.6	24.5	22.0
DT10	370818	428020	Roadside	100	100.0	31.1	26.8	31.0	32.1	25.9
DT11	370758	428004	Roadside	100	100.0	███████	███████	███████	26.0	17.3
DT12	370836	428130	Roadside	100	100.0	19.5	16.9	18.6	17.4	15.8
DT13	370908	428217	Urban Background	100	100.0	15.8	13.7	13.5	12.7	10.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
DT14	369941	428054	Roadside	100	100.0				21.3	14.7
DT15	369026	429180	Roadside	92.31	100.0	28.3	24.9	28.5	25.6	24.2
DT16	368964	429168	Roadside	100	100.0	27.3	24.1	27.5	26.2	24.3
DT17	368981	429090	Roadside	92.31	100.0	22.8	19.1	21.1	21.2	19.5
DT18	369049	429064	Urban Background	84.34	100.0	18.5	15.6	14.8	15.2	14.6
DT19	369074	429152	Kerbside	92.58	100.0				22.6	15.6
DT20	369259	422050	Roadside	75	100.0	27.3	20.2	27.1	24.9	23.1
DT21	364510	425687	Roadside	100	100.0	27.7	22.8	24.5	24.3	22.0
DT22	369157	422494	Urban Background	100	100.0	13.3	11.7	10.8	10.4	9.1
DT23	366879	427604	Urban Background	100	100.0	12.7	10.7	12.1	11.1	9.9
DT24	368295	427816	Kerbside	100	100.0			22.5	23.3	21.5
DT25	366652	427281	Roadside	100	100.0	29.2	24.9	27.5	25.9	23.3
DT26	368959	430708	Roadside	100	100.0	20.1	17.5	19.4	18.9	17.6
DT27	370188	423058	Roadside	100	100.0	16.3	12.8	13.3	13.2	12.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
DT28	369438	423251	Roadside	100	100.0	16.0	12.9	14.4	15.1	13.4
DT29	368170	424617	Roadside	100	100.0	26.4	22.2	23.8	23.8	20.3
DT30	370335	427988	Roadside	100	100.0	27.4	26.8	27.2	25.8	22.7
DT31	368552	423366	Roadside	100	100.0	20.7	18.1	17.7	18.0	17.1
DT32	369252	422131	Roadside	100	100.0	34.0	27.9	29.2	26.7	25.0
DT33	368231	424376	Roadside	100	100.0	25.3	21.9	22.9	21.0	18.4
DT34	368240	424299	Roadside	92.31	100.0	24.8	21.6	22.1	20.8	20.7
DT36	368371	424195	Urban Background	100	100.0	15.4	13.9	14.1	13.4	11.8
DT37	369789	425346	Urban Background	100	100.0	14.6	12.2	12.5	11.7	9.9
DT38	369650	425374	Roadside	100	100.0	33.4	28.3	28.7	14.9	13.9
DT39	369615	425371	Roadside	100	100.0	31.5	26.6	29.5	29.4	27.0
DT40	369634	425359	Roadside	100	100.0	26.7	22.4	24.9	21.6	18.7
DT41	369591	425360	Kerbside	100	100.0	27.3	23.1	26.8	23.6	23.1
DT42	367904	429576	Roadside	100	100.0	20.6	16.3	15.1	20.0	17.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
DT43	367934	429582	Roadside	100	100.0	32.2	24.8	29.0	28.9	26.7
DT44	367992	429697	Urban Background	100	100.0	15.9	14.8	19.7	14.0	11.8
DT45	367924	429561	Roadside	100	100.0	31.9	27.8	29.2	28.2	26.6
DT46	369526	425572	Roadside	100	100.0				18.3	15.1
DT47, DT48, DT49	370241	428026	Roadside	92.67	100.0	20.2	17.9	19.4	18.9	14.9

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

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

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

Notes:

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

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

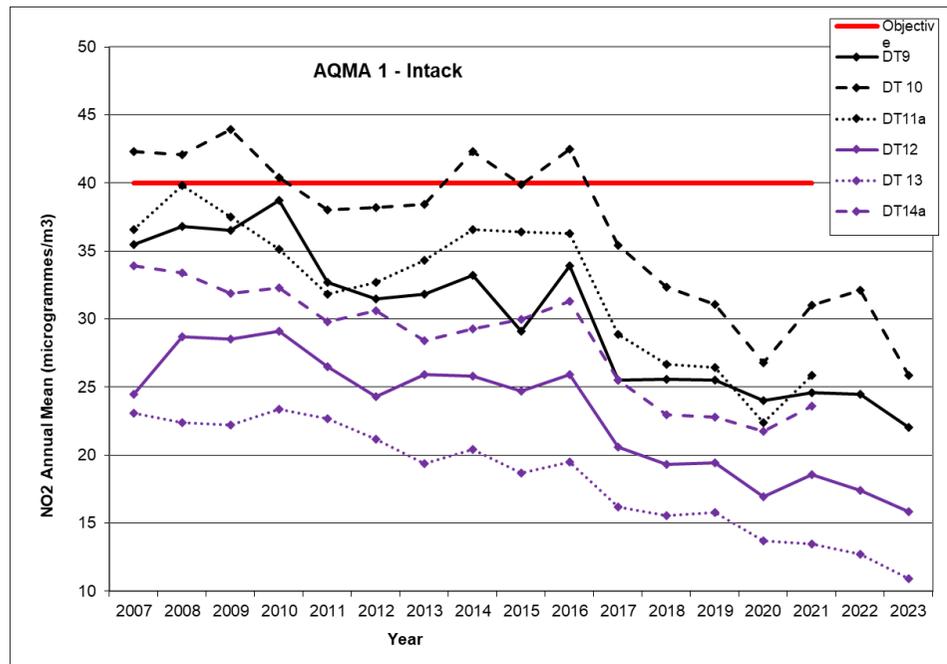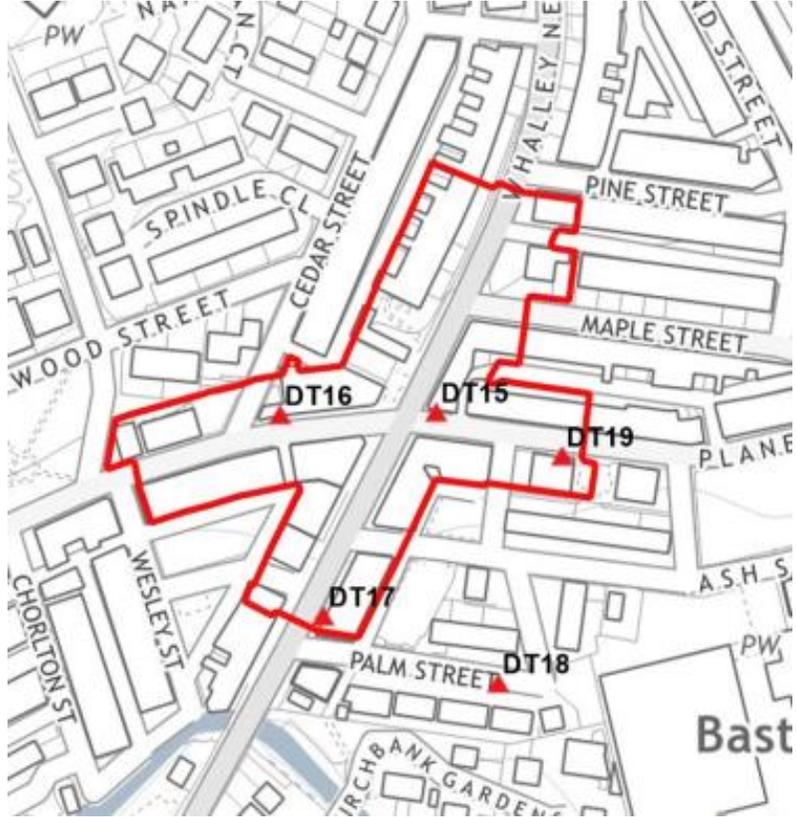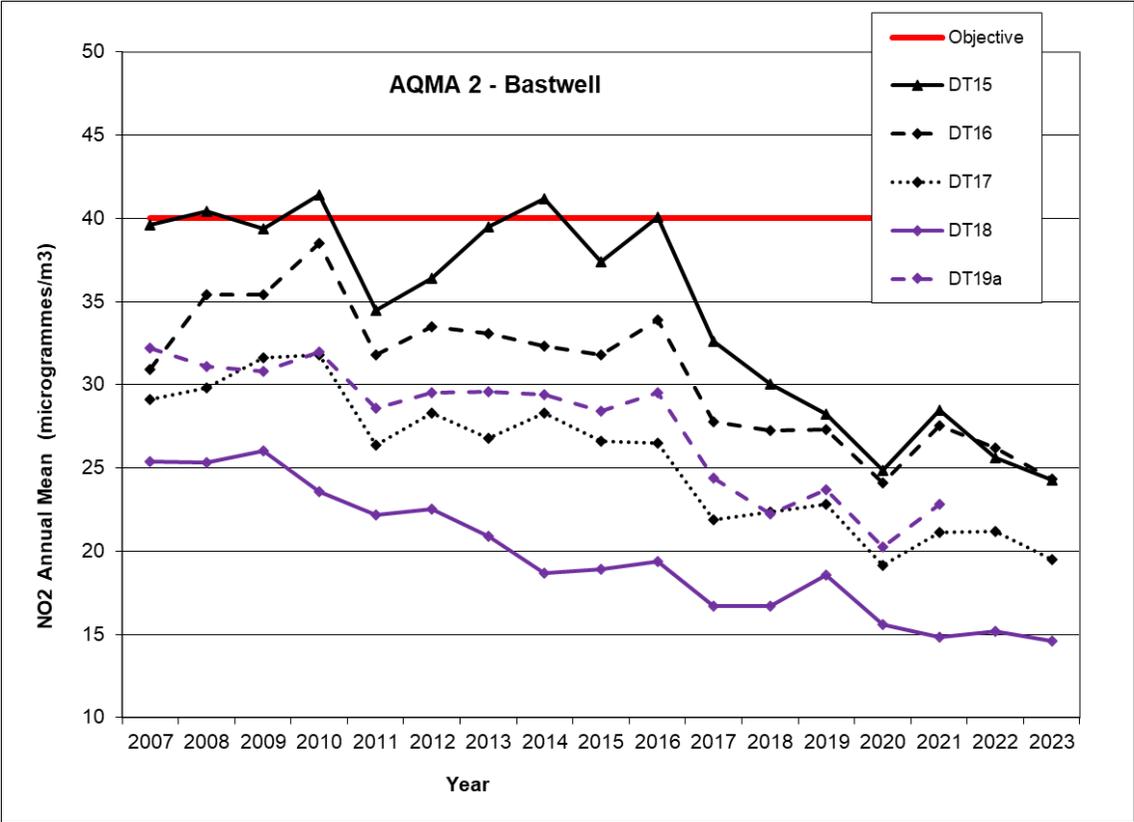## Figure A.1 – Trends in Annual Mean NO₂ Concentrations

Figure A.1.1 – Former Intack AQMA - This figure presents NO_2 annual mean concentrations at the AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m³, so an exceedance of the 200µg/m³ 1-hour mean air quality objective is unlikely. The suffix (a) is used after DT11 & DT14 to indicate that these tubes have now been moved to alternative locations. The map below indicates their previous location within the AQMA for context.
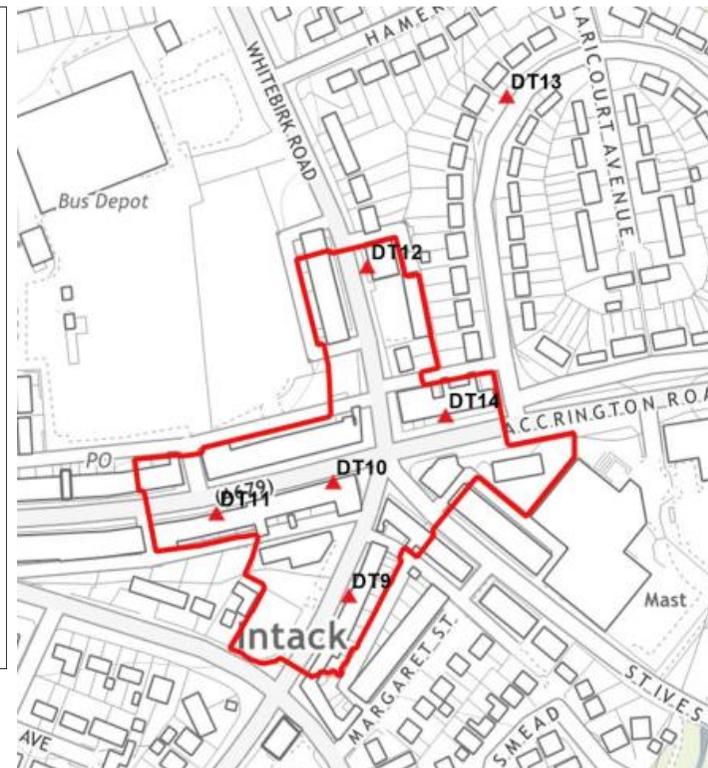
Figure A.1.2 – Former Bastwell AQMA - This figure presents NO2 annual mean concentrations at the AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely. The suffix (a) is used after DT19 to indicate that this tube has now been moved to an alternative location. The map below indicates their previous location within the AQMA for context.

Additional comments: The 2021 annual means at DT15 and DT16 were above the pre-pandemic levels, but the increases were insignificant (0.2 and 0.2 µg/m^3 respectively) and exposures remained below 75% of the objective. The DT15 June 2021 measurement of 56 µg/m3 has been omitted as erroneous data – it was much higher than any other month during 2021 (levels are ususally higher in winter), and it was higher than any roadside/kerbside June 2021 measurement obtained anywhere else in the borough.
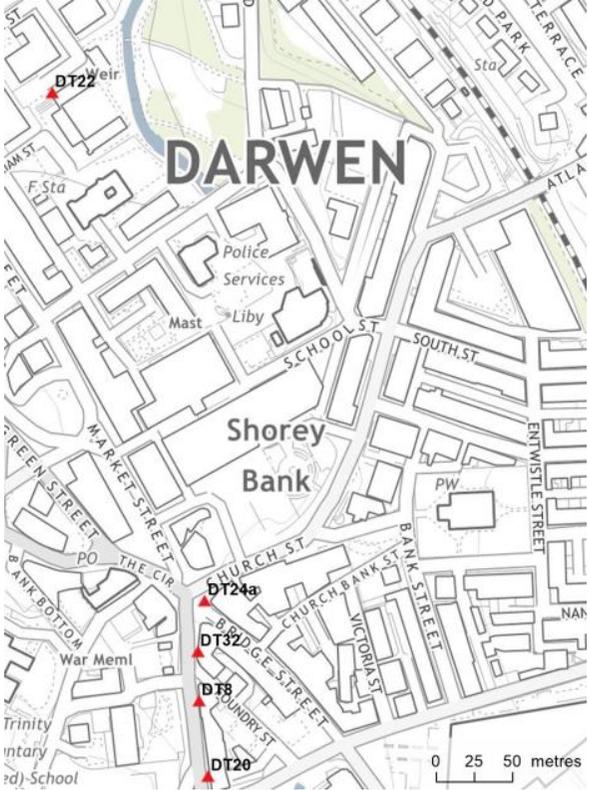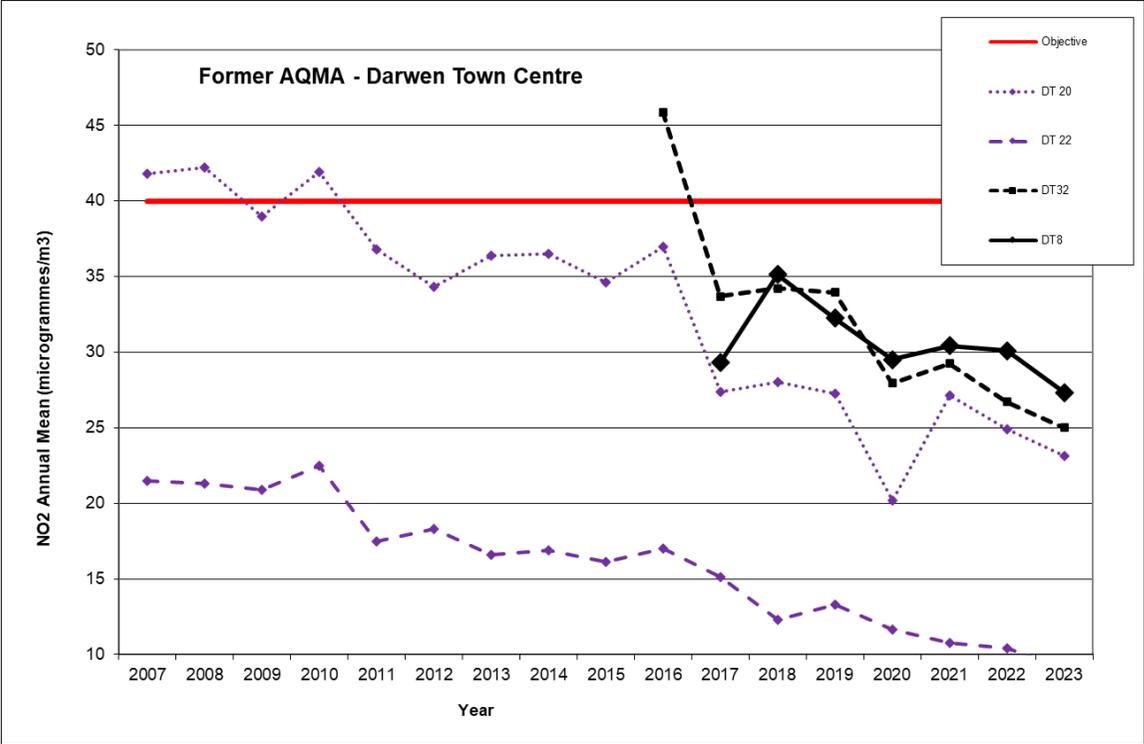
Figure A.1.3 – Former Witton AQMA - This figure presents NO2 annual mean concentrations at the former AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and from 2017 onwards there appears to be no clear trend. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely
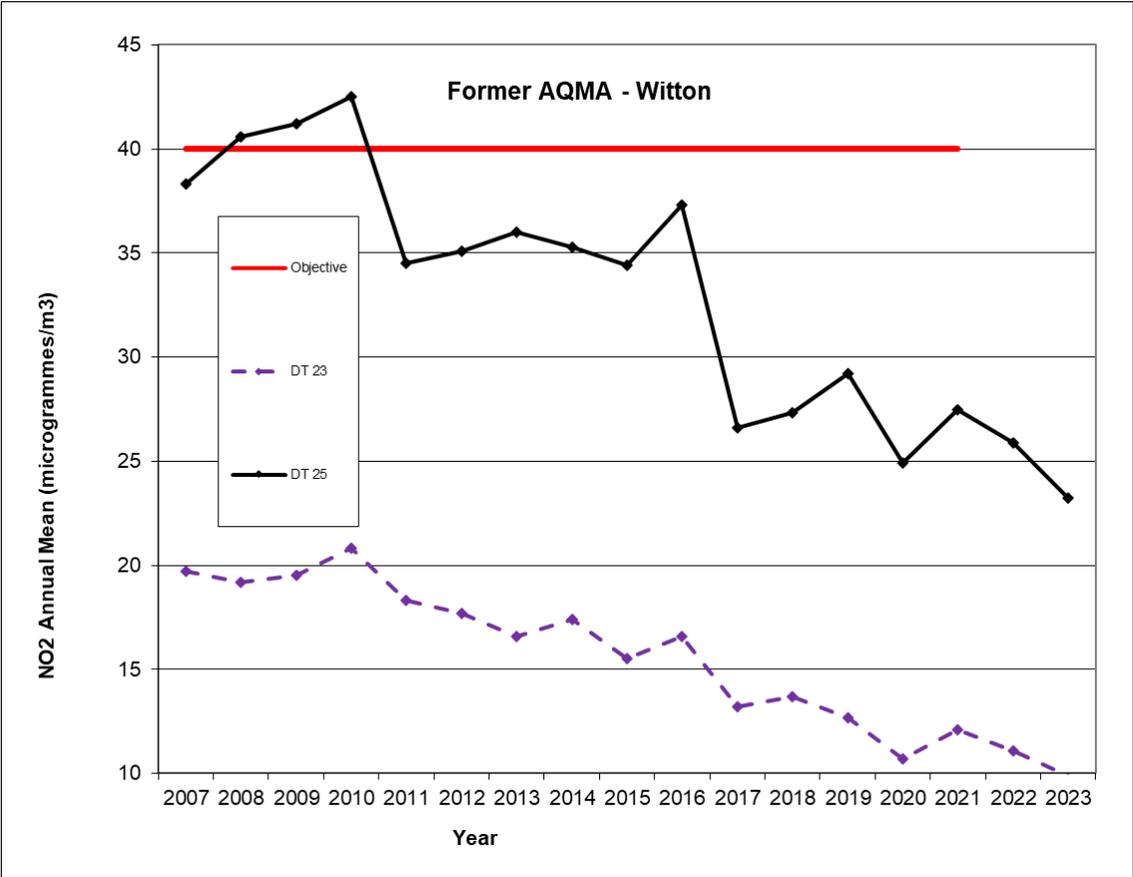
Figure A.1.4 – Former Darwen Town Centre AQMA - This figure presents NO2 annual mean concentrations at the former AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely. DT24a on the map was only located at this site for one year (2021). Unfortunately, the lamppost was damaged and subsequently replaced. The tube was never reinstated. As such, the data has not been included in the trend line chart. The Annual Average adjusted figure for 2021 for DT24a was 22.5µg/m^3.

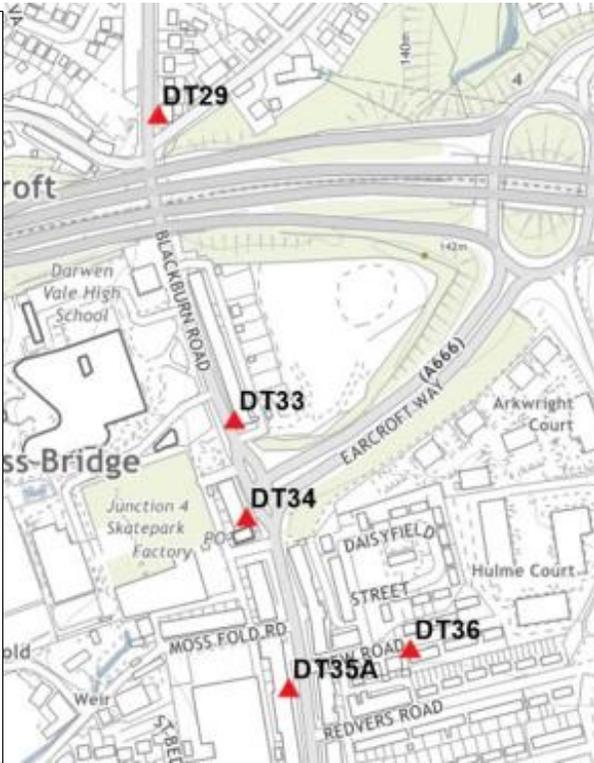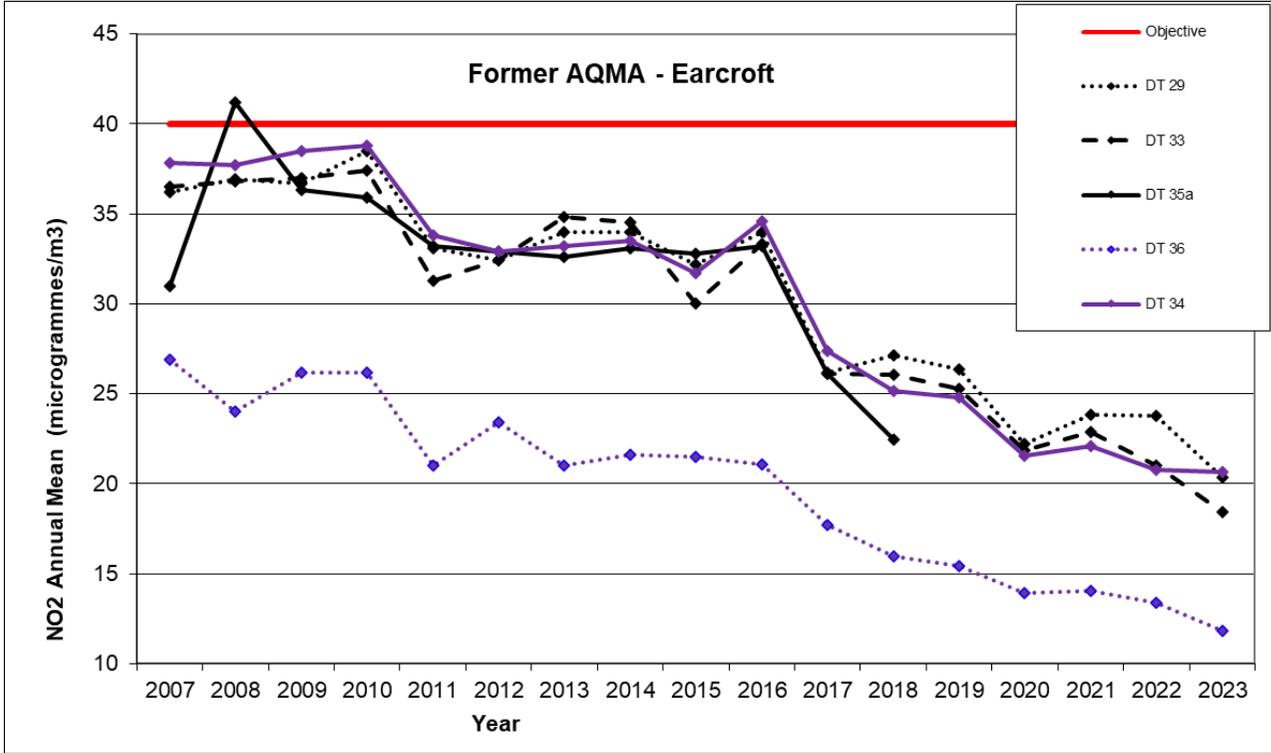**Figure A.1.5 – Former Earcroft AQMA - This figure presents NO2 annual mean concentrations at the former AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely. The suffix (a) is used after DT35a to indicate that this tube has now been moved to an alternative location. The map below indicates their previous location within the AQMA for context.**

Figure A.1.6 - Blackamoor AQMA - This figure presents NO₂ annual mean concentrations at the AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely.
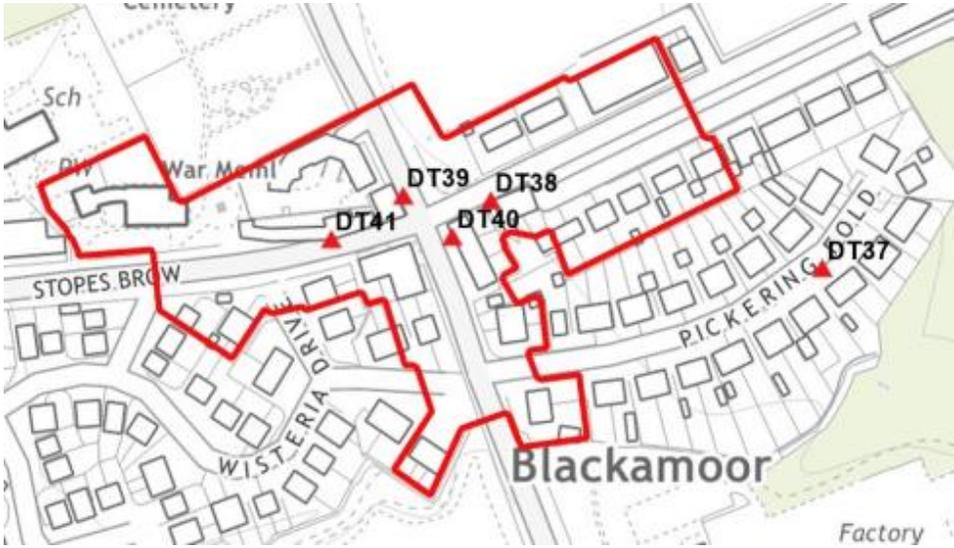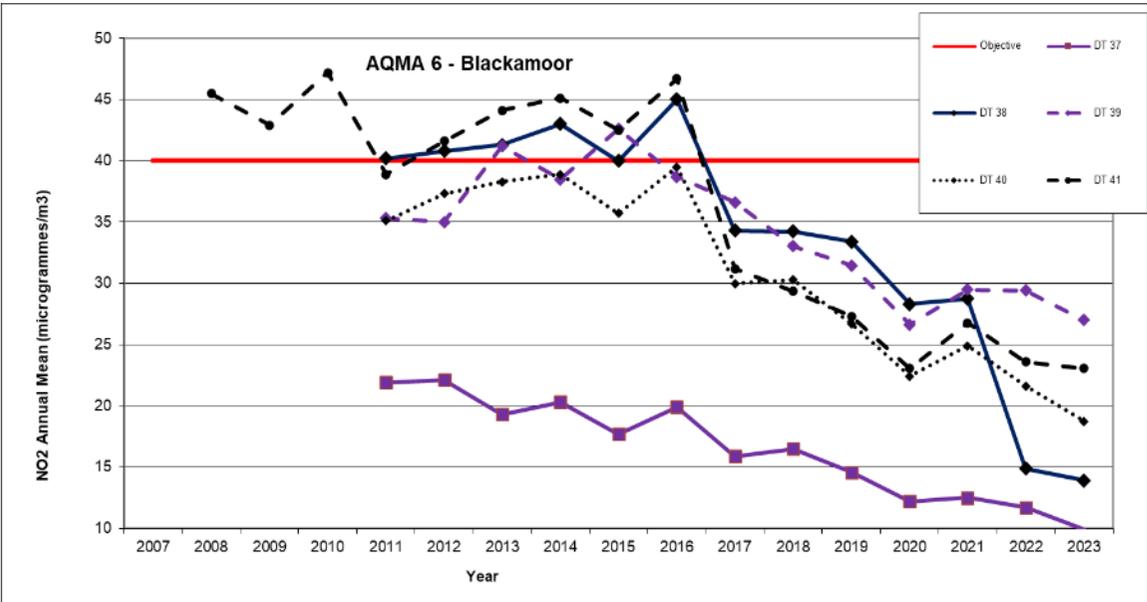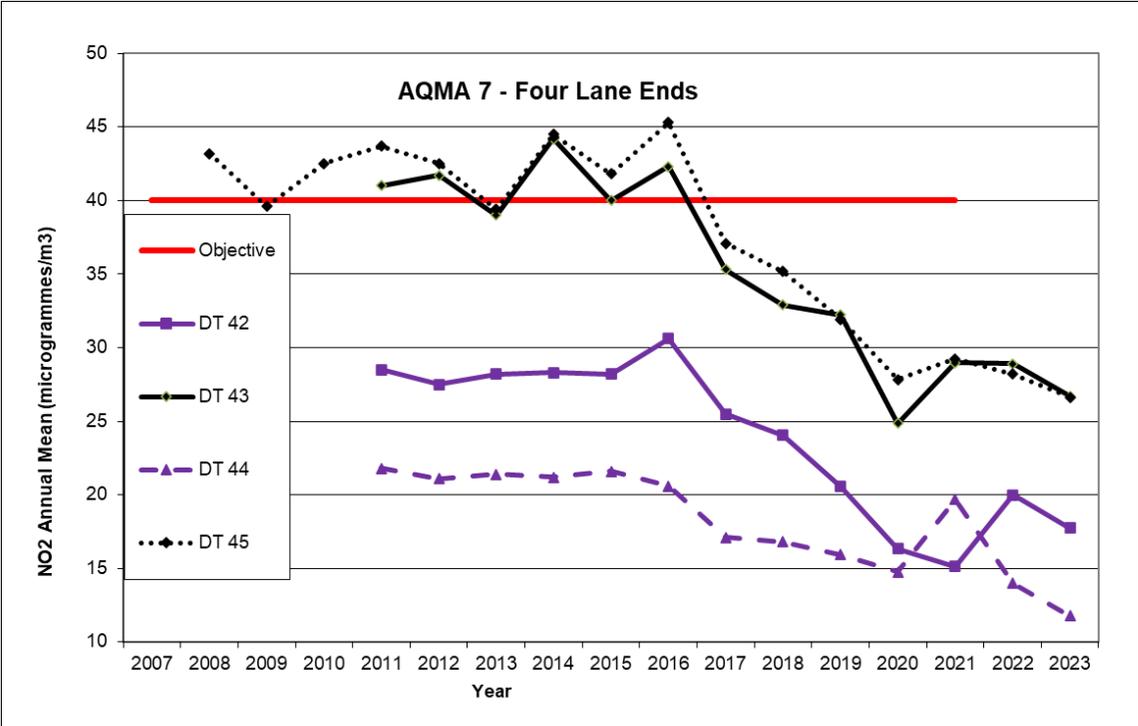
Figure A.1.7 – Four Lane Ends Former AQMA - This figure presents NO2 annual mean concentrations at the AQMA between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely

Additional comment: The 2021 increase at DT44 to well above pre-pandemic levels isn't expected, and not evident at the nearby roadside monitoring locations, which all remain below pre-pandemic levels. This increase isn't evident at other urban backgrounds elsewhere in the borough. The council isn't aware of any local circumstances that could account for this.

Figure A.1.8 – Automatic Monitor at Accrington Rd Community Centre - This figure presents NO2 annual mean concentrations between 2014 to 2021. There have been no exceedances of the annual mean objective, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely
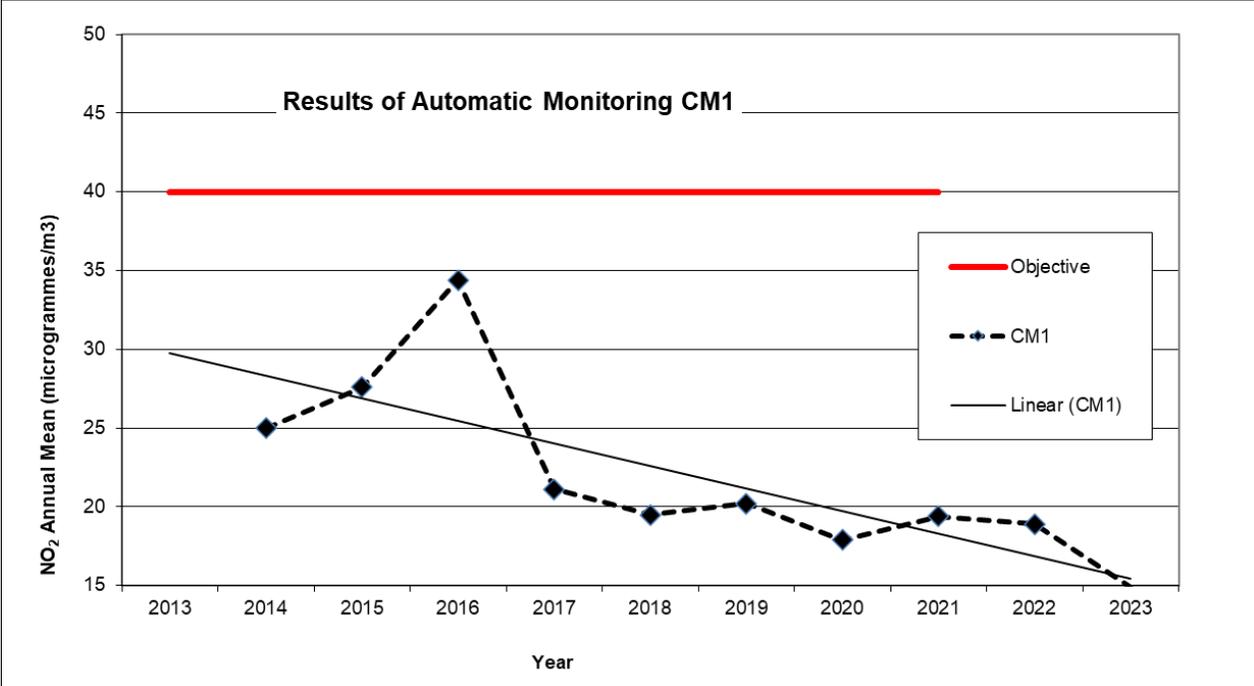
Figure A.1.9 – Feniscowles - This figure presents NO2 annual mean concentrations between 2019 to 2023. There have been no exceedances of the annual mean objective. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely.
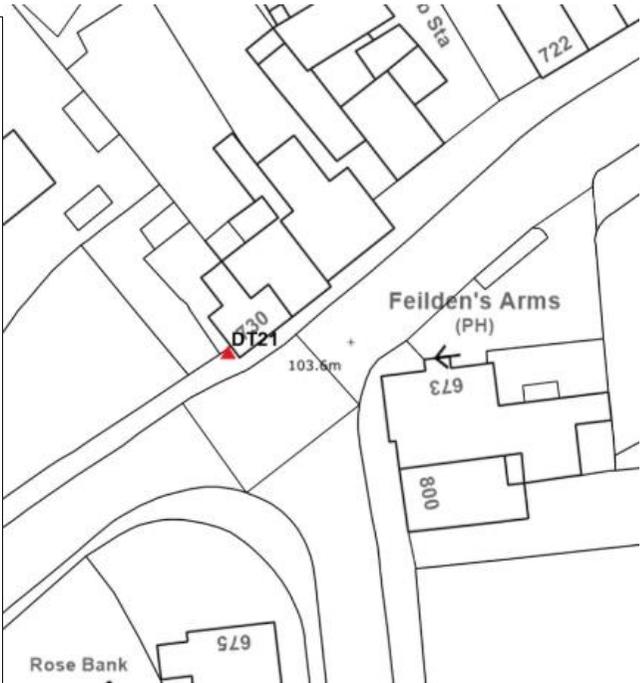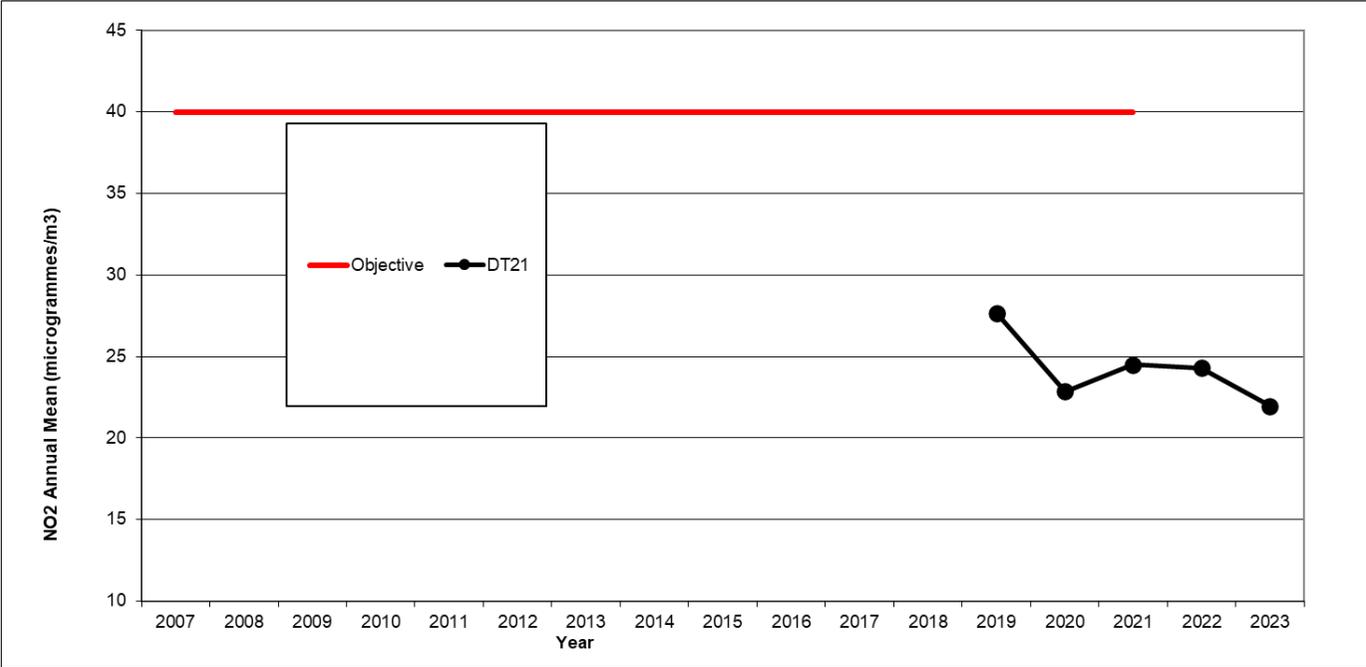
Figure A.1.10 – Brownhill - This figure presents NO2 annual mean concentrations between 2019 to 2023. There have been no exceedances of the annual mean objective. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely.

Figure A.1.11 – Toll Bar - This figure presents NO2 annual mean concentrations between 2009 to 2023. There have been no exceedances of the annual mean objective. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely.
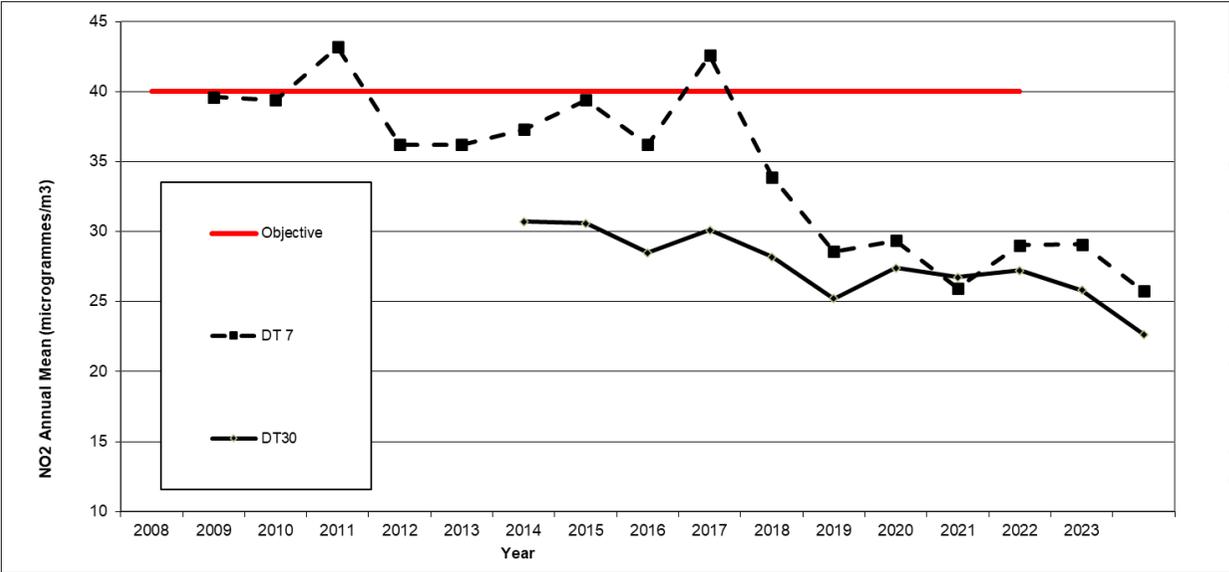
Figure A.1.12 – Guide - This figure presents NO2 annual mean concentrations between 2007 to 2023. There have been no exceedances of the annual mean objective. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely.
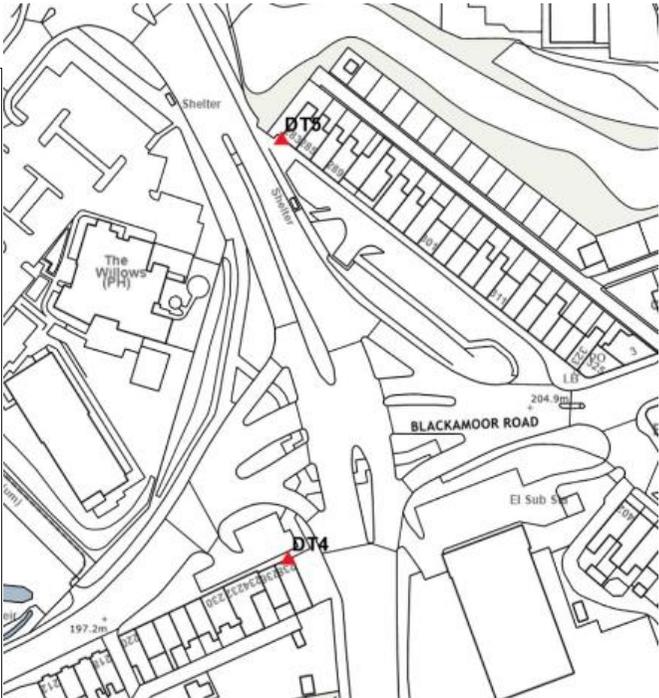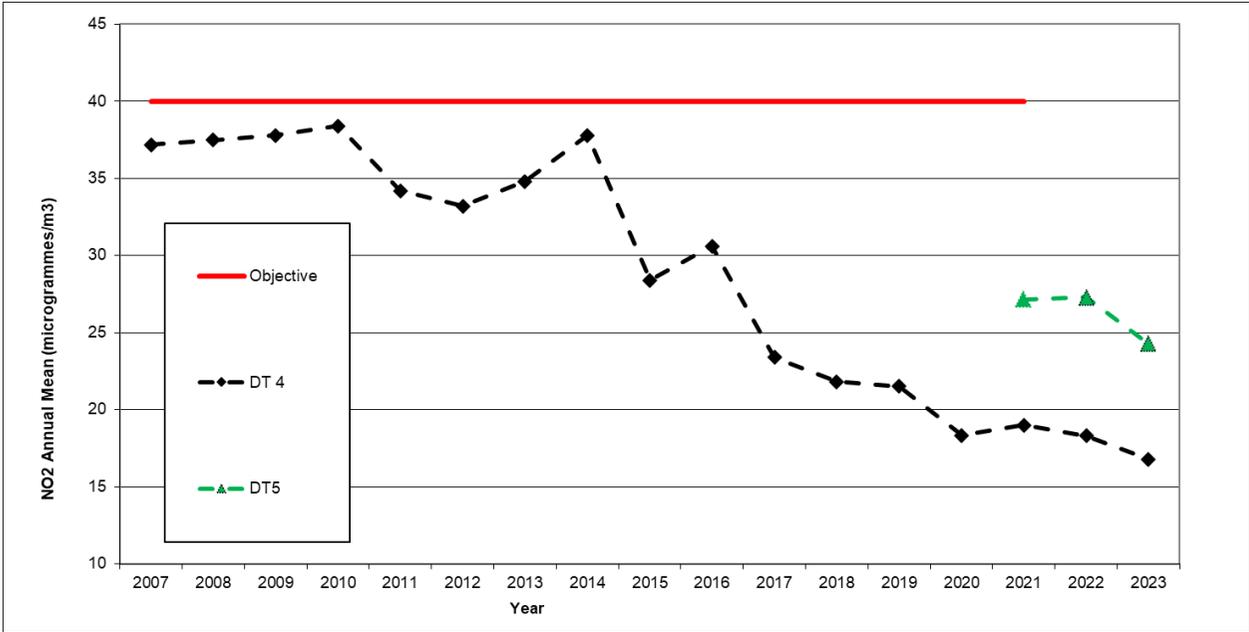
Figure A.1.13 – Darwen Street - This figure presents NO2 annual mean concentrations between 2021 to 2023. There have been no exceedances of the annual mean objective. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m^3 1-hour mean air quality objective is unlikely.
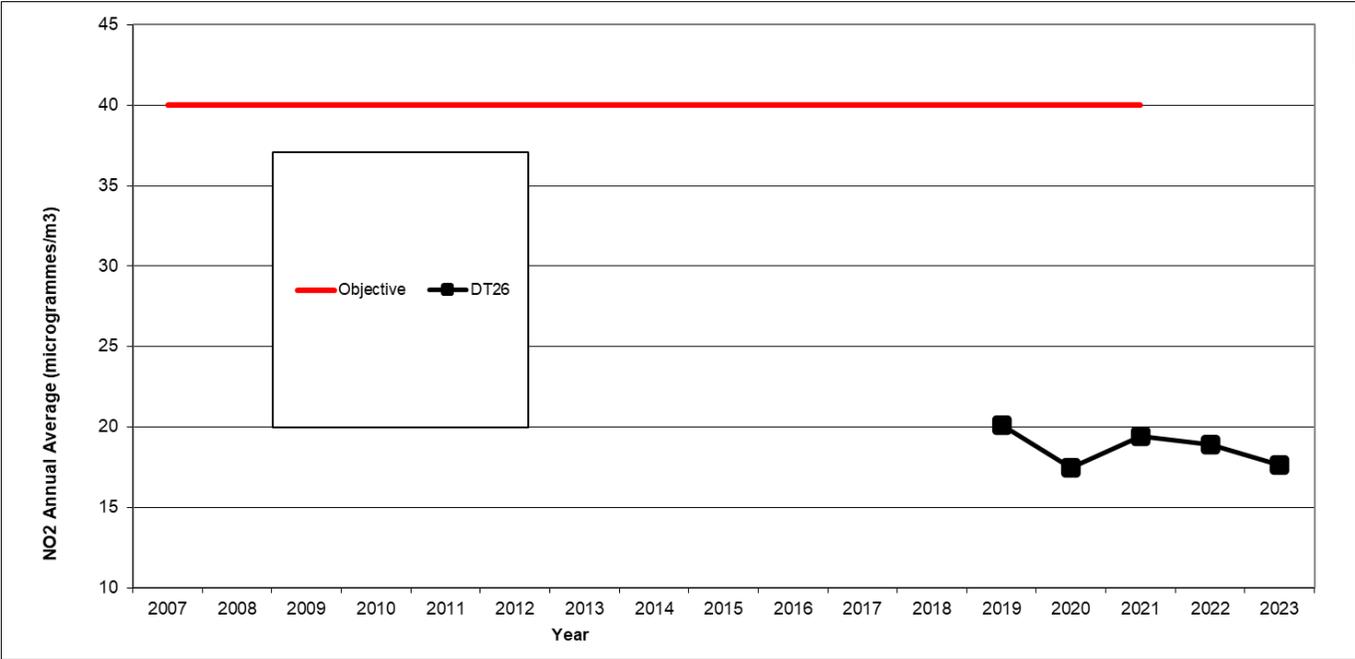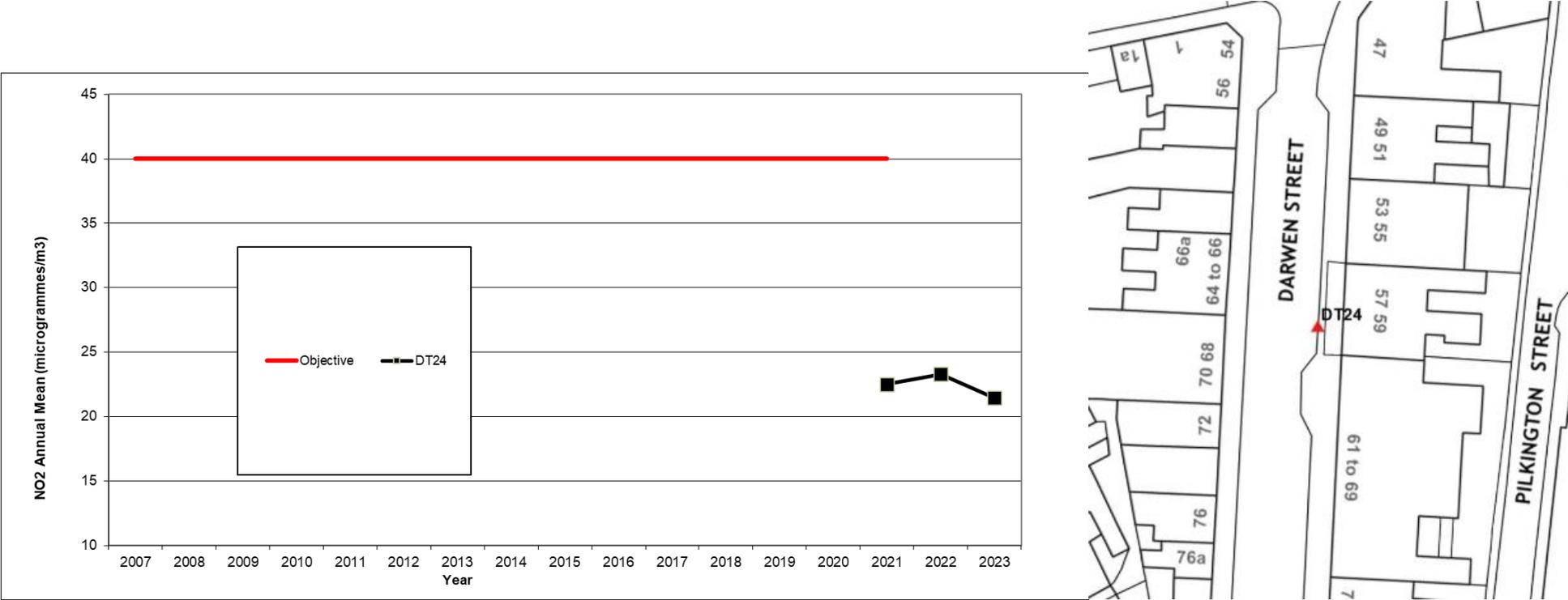
Figure A.1.14 – Moorgate/Livesey Branch Rd - This figure presents NO2 annual mean concentrations between 2007 to 2023. There have been no exceedances of the annual mean objective since 2016, and there is a general trend of reduced exposure at this location. Annual mean exposures are well under 60μg/m3, so an exceedance of the 200μg/m3 1-hour mean air quality objective is unlikely. The (a) after tube 2a indicates that the tube has since been relocated and is only included here for reference.

Figure A.1.15 – Birch Hall & Hollins Grove - This figure presents NO2 annual mean concentrations between 2013 to 2023. There have been no exceedances of the annual mean objective. Annual mean exposures are well under 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely.
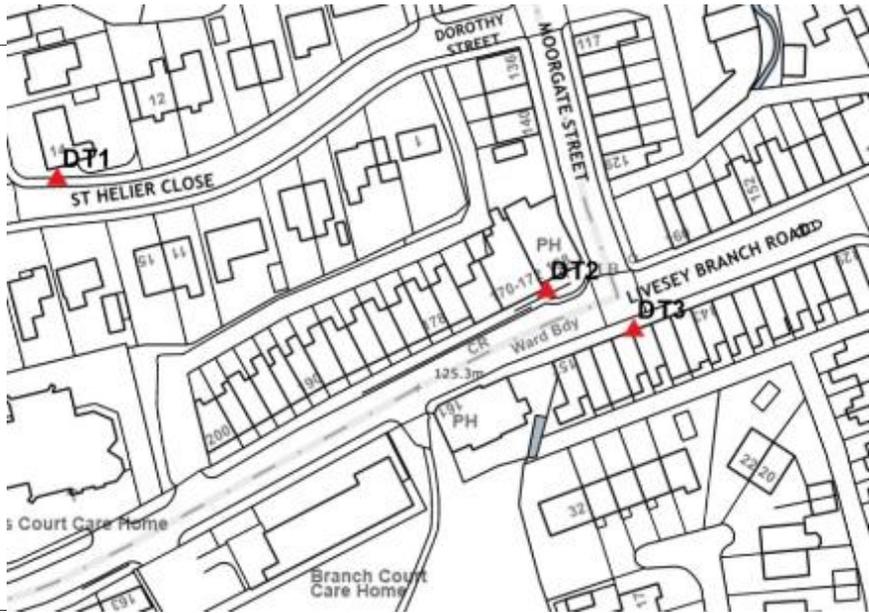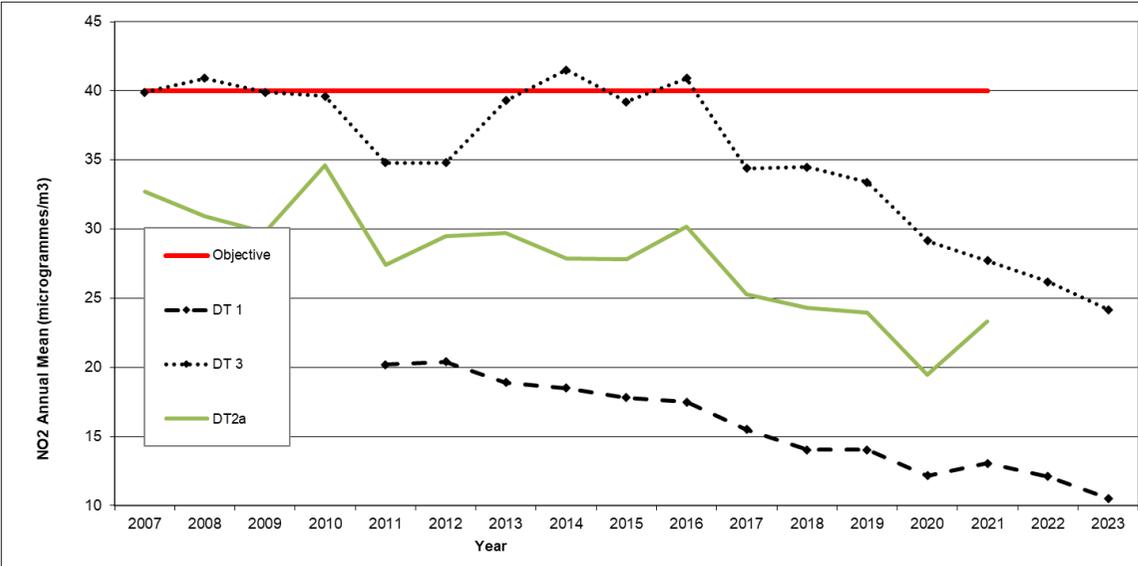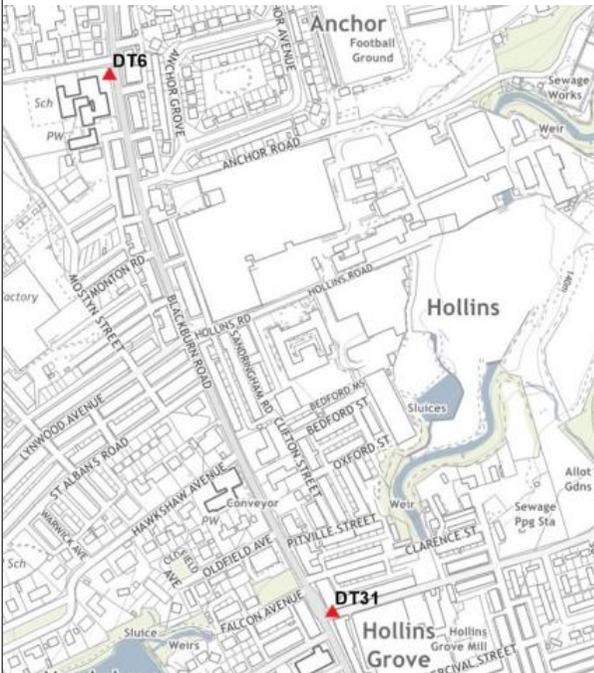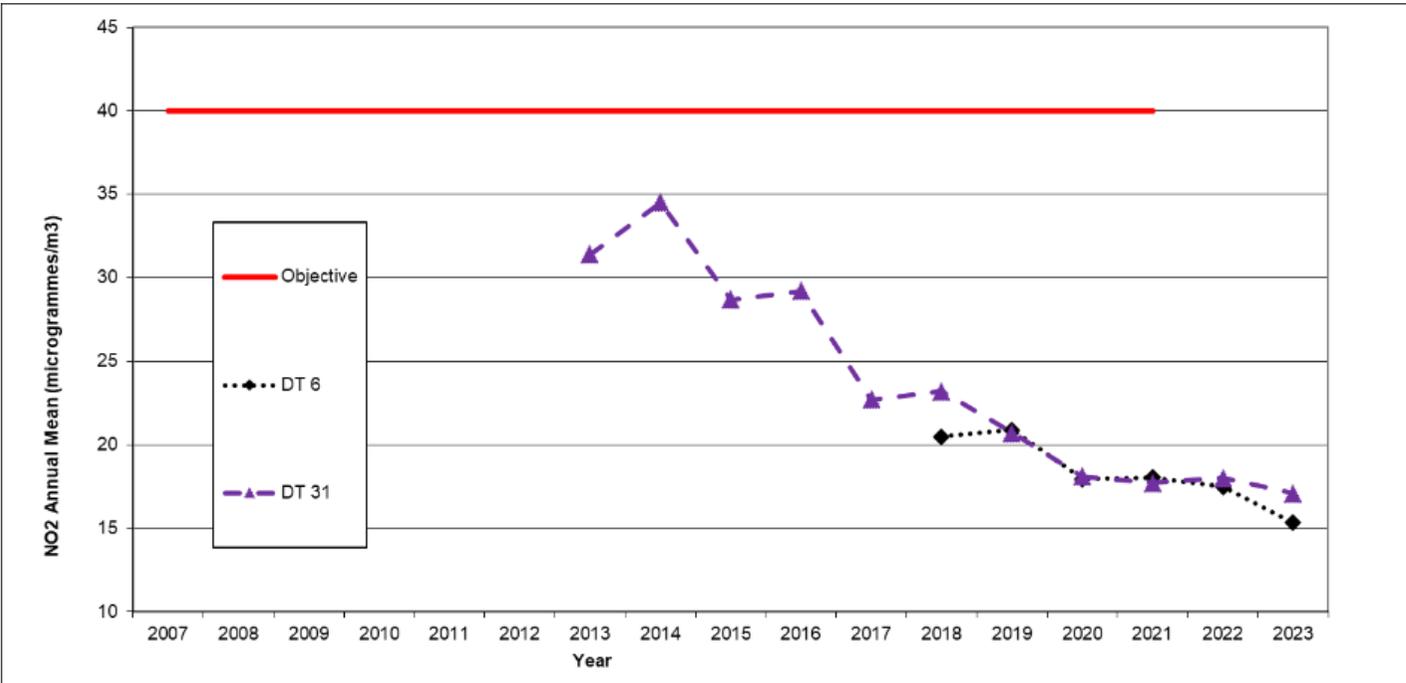
A 1.1 Additional discussion relating to the potential revocation of the AQMA at Blackamoor

There hasn't been an exceedance of the 40µg/m3 annual mean NO2 objective within the Blackamoor AQMA since 2017. Exposure has been well below the objective for five years. Annual mean exposures have been well below 60µg/m3, so an exceedance of the 200µg/m3 1-hour mean air quality objective is unlikely. Nationally, roadside NO2 pollution has reduced in the long-term and in recent years, after being stable for most of the 2000s. Locally, at the Blackamoor AQMA the background NO2 has been cut by c.50% since monitoring began. Concentrations at the junction have dropped by similar orders of magnitude since the peak in 2016/17.

There was a sharp decline in NO2 exposure during 2020, due to a reduction in road traffic and the resulting exhaust emissions during the COVID pandemic. Traffic increased in 2021 but remained lower than in pre-pandemic levels. Although traffic flows are expected to return to pre-covid levels, the long-term improvement in air quality is likely to be sustained as newer road vehicles subject to stricter emission standards replace older more polluting vehicles.

The changes to the junction in 2021 are most keenly demonstrable in DT38, which was located adjacent to the traffic lights at the former eastern arm of the junction, on Blackamoor Road. This arm was truncated in 2021 making Blackamoor Road a dead end and converting the junction as a whole to a 3-arm junction. DT41 and DT39 have seen slower falls in concentration since the changes to the junction. These tubes are located adjacent to the left hand turn from Stokes Brow towards Blackburn town centre and the new Issa Way link road, and as such traffic is accelerating uphill away from the junction. The junction changes do not significantly alter the traffic trajectory at this point, and it is therefore to be expected that these locations would be more sensitive to emissions. However, the annual mean at these locations remains significantly below the objective and have done for a number of years.

In conclusion, there is strong evidence to support an assumption that air quality has improved at this AQMA. The NO_2 quality standards and objectives are being achieved and are likely to remain compliant for the foreseeable future. Year on year fluctuations in pollution levels are expected, caused by a range of factors including the weather, but an exceedance of the objective during the foreseeable future is considered unlikely. It would appear that the appropriate course of action is to revoke this AQMA. The Council will be consulting the statutory consultees and the public before deciding whether to revoke or not.

Table A.5 – 1-Hour Mean NO$_2$ Monitoring Results, Number of 1-Hour Means > 200μg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM1	370241	428026	Roadside	100	100	0	0	0	0	0

Notes:

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

Exceedances of the NO$_2$ 1-hour mean objective (200μg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A.6 – Annual Mean PM$_{10}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM2	369242	427919	Urban Background	99.9	33	-	-	-	-	11

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

Notes:

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

Exceedances of the PM$_{10}$ annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM2	369242	427919	Urban Background	99.9	33	-	-	-	-	0 (21)

Notes:

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

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
CM2	369242	427919	Urban Background	99.9	33	-	-	-	-	7

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

Notes:

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO₂ 2023 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.7)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	367034	425946	21.7	19.8	15.0	14.0	11.0	11.0	8.5	11.0	12.9	19.0	23.3	13.3	15.0	10.5	-	
DT2	367135	425923	19.8	22.5	17.2	17.8	13.4	15.7	10.1	12.9	17.1	17.2	24.7	14.1	16.9	11.8	-	
DT3	367153	425915	40.1	36.8	38.4	38.4	31.2	31.9	28.4	29.2	32.3	35.4	42.2	30.3	34.6	24.2	-	
DT4	370492	425781	26.7	26.5	26.5	25.0	22.1	22.2	18.9	19.6	25.9	24.9	30.6	19.1	24.0	16.8	-	
DT5	370486	425892	38.6	37.7	34.7	41.6	33.7	34.6	26.3	28.7	38.8	34.4	39.4	27.8	34.7	24.3	-	
DT6	368298	423985	24.9	26.9	24.5	24.8	18.5	17.1	11.8	17.3	20.7	24.2	30.2	22.1	21.9	15.3	-	
DT7	370386	427973	43.8	40.4	36.2	39.7	34.2	33.7	33.3	32.8	37.0	38.2	38.5	33.8	36.8	25.8	-	
DT8	369253	422103	40.6	43.1	40.6	47.3	35.6	40.3	31.4	31.3	41.4	39.8	44.2	32.8	39.0	27.3	-	
DT9	370826	427962	32.8	33.8	34.0	38.0	28.8	33.2	22.3	25.2	34.7	33.5	37.1	24.1	31.5	22.0	-	
DT10	370818	428020	41.3	44.8	38.8	44.7	31.7	35.0	32.6	34.8	45.5	38.0	34.8	21.3	36.9	25.9	-	
DT11	370758	428004	28.9	31.9	23.6	24.5	23.3	17.8	16.5	21.6	25.7	25.9	33.4	22.8	24.7	17.3	-	
DT12	370836	428130	29.4	28.9	23.9	23.3	18.2	20.3	13.9	17.6	23.2	23.9	29.0	19.7	22.6	15.8	-	
DT13	370908	428217	23.0	19.5	15.7	14.1	11.6	10.4	9.7	11.8	16.3	18.9	21.0	14.9	15.6	10.9	-	
DT14	369941	428054	27.0	25.1	21.8	23.0	19.5	16.1	5.6	18.6	22.5	23.7	29.1	20.1	21.0	14.7	-	
DT15	369026	429180	-	43.5	35.1	35.4	32.9	33.7	28.5	29.9	37.0	34.5	40.1	30.5	34.6	24.2	-	Jan Tube Missing
DT16	368964	429168	37.9	39.3	34.5	38.5	35.0	33.7	25.5	30.1	35.6	38.4	41.6	27.0	34.8	24.3	-	
DT17	368981	429090	29.8	31.8	29.0	30.2	25.4	30.5	19.7	22.6	-	30.1	33.5	24.1	27.9	19.5	-	Sept Tube Missing

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.7)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT18	369049	429064	33.1	22.7	17.9	-	11.4	28.2	-	14.5	18.2	16.9	25.8	20.1	20.9	13.5	-	April Tube Tampered With/July Tube Missing
DT19	369074	429152	28.6	26.3	21.7	21.2	-	20.6	15.9	17.1	23.4	24.1	27.2	19.2	22.3	15.6	-	May Tube Missing
DT20	369259	422050	32.4	36.3	33.3	-	-	-	25.1	27.1	36.4	35.6	38.2	32.8	33.0	20.8	-	Tube Missing or Tampered With
DT21	364510	425687	33.3	35.7	34.4	34.1	26.9	28.6	27.1	26.1	35.7	25.9	41.2	27.7	31.4	22.0	-	
DT22	369157	422494	18.3	17.3	13.1	12.0	9.5	8.2	8.6	9.3	11.8	15.6	19.9	13.0	13.1	9.1	-	
DT23	366879	427604	19.1	18.6	15.4	13.8	9.3	10.5	7.7	9.8	12.2	17.9	21.6	13.5	14.1	9.9	-	
DT24	368295	427816	34.4	36.1	31.0	32.9	27.4	28.9	22.4	24.9	33.3	34.6	36.3	25.6	30.7	21.5	-	
DT25	366652	427281	35.9	38.4	33.6	35.5	29.5	30.4	27.0	26.8	36.3	36.5	38.9	29.8	33.2	23.3	-	
DT26	368959	430708	29.2	29.4	25.9	27.7	20.1	24.5	18.0	19.8	27.5	27.0	29.3	24.0	25.2	17.6	-	
DT27	370188	423058	22.9	20.7	15.5	15.8	15.1	13.1	12.6	16.0	16.2	18.6	25.3	14.3	17.2	12.0	-	
DT28	369438	423251	25.7	23.2	18.6	16.9	17.9	12.5	16.0	17.0	17.8	20.7	26.6	17.4	19.2	13.4	-	
DT29	368170	424617	32.9	35.3	32.7	34.6	25.9	12.2	24.3	23.8	33.4	32.3	34.1	27.1	29.0	20.3	-	
DT30	370335	427988	42.5	36.8	30.1	30.7	28.5	29.5	24.8	27.6	34.5	33.3	39.3	30.8	32.4	22.7	-	
DT31	368552	423366	29.5	29.7	24.5	25.8	22.9	21.9	18.5	19.5	23.6	24.7	30.0	22.2	24.4	17.1	-	
DT32	369252	422131	38.0	40.5	36.7	40.0	33.0	36.3	23.3	29.3	38.5	32.6	42.9	37.7	35.7	25.0	-	
DT33	368231	424376	31.9	30.1	25.7	30.9	14.4	27.7	17.8	21.3	28.3	30.7	31.8	25.0	26.3	18.4	-	
DT34	368240	424299	-	38.6	28.5	31.5	29.4	29.2	25.5	24.9	28.7	23.4	37.3	27.8	29.5	20.7	-	
DT36	368371	424195	22.6	21.6	16.0	16.7	13.8	12.3	10.3	13.6	15.6	18.8	26.2	15.6	16.9	11.8	-	
DT37	369789	425346	17.4	18.5	14.2	13.1	10.2	9.4	10.4	10.5	14.2	16.8	21.9	13.9	14.2	9.9	-	
DT38	369650	425374	27.5	24.8	18.0	17.3	16.5	14.6	17.1	15.1	20.0	21.0	26.1	20.5	19.9	13.9	-	
DT39	369615	425371	53.5	44.6	34.6	37.8	37.0	32.9	33.7	33.2	38.0	36.3	45.2	36.1	38.6	27.0	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.7)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT40	369634	425359	36.2	31.1	24.7	29.1	26.0	24.0	18.7	23.7	28.6	24.1	33.0	22.3	26.8	18.7	-	
DT41	369591	425360	39.4	36.6	32.5	36.5	34.5	30.8	24.3	28.0	32.6	34.0	41.6	24.7	32.9	23.1	-	
DT42	367904	429576	30.4	28.7	23.5	26.1	27.6	22.8	21.1	21.0	27.1	26.9	29.3	19.6	25.4	17.7	-	
DT43	367934	429582	41.3	40.7	40.4	41.1	37.7	40.9	34.7	32.0	36.0	38.3	40.3	34.2	38.1	26.7	-	
DT44	367992	429697	23.4	21.2	19.3	16.1	12.4	12.1	13.7	12.1	15.8	17.4	20.5	18.0	16.8	11.8	-	
DT45	367924	429561	45.4	42.0	36.9	36.2	37.5	33.1	36.9	32.4	38.3	37.9	42.7	37.2	38.0	26.6	-	
DT46	369526	425572	28.3	27.6	20.2	24.5	15.9	19.4	12.8	15.8	19.9	27.1	26.2	20.3	21.5	15.1	-	
DT47	370241	428026	30.5	26.5	23.3	21.6	19.3	16.8	16.6	18.5	23.5	-	-	20.4	-	-	-	Triplicate Site with DT47, DT48 and DT49 - Annual data provided for DT49 only
DT48	370241	428026	31.4	26.5	23.3	21.3	19.2	17.6	16.3	19.3	23.4	26.3	29.3	22.6	-	-	-	Triplicate Site with DT47, DT48 and DT49 - Annual data provided for DT49 only
DT49	370241	428026	30.5	26.8	22.0	21.6	19.2	17.6	16.1	19.4	22.7	25.1	32.5	21.1	22.7	15.9	-	Triplicate Site with DT47, DT48 and DT49 - Annual data provided for DT49 only

✓**All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1**

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

✓**Local bias adjustment factor used**

☐ **National bias adjustment factor used**

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

✓**Blackburn with Darwen confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Blackburn with Darwen During 2023

Blackburn with Darwen Borough Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Blackburn with Darwen During 2023

Blackburn with Darwen Borough Council has revoked three AQMAs during the course of 2023 at Intack, Bastwell, and Four Lane Ends. Furthermore, work has started within the Council to establish an air quality steering group in order to begin the process of drafting an Air Quality Strategy for the Borough. See section 2.2 for further information in relation to action taken during 2023.

QA/QC of Diffusion Tube Monitoring

During 2023 Blackburn with Darwen Borough Council monitored NO_2 levels at all 46 of its monitoring sites in adherence with the 2023 Diffusion Tube Monitoring Calendar using 20% TEA in water diffusion tubes provided and analysed by Gradko International Ltd.

Gradko International Ltd is a UKAS accredited testing laboratory No. 2187. The accreditation applies to the analysis undertaken on the diffusion tubes.

The table below (table C.0) summarises Gradko's performance in recent AIR NO_2 PT rounds, including the percentage (%) of submitted results which were subsequently determined to be satisfactory.

Table C.0: Laboratory summary performance for AIR NO2 PT rounds AR046, 49, 50, 52, 53, 55, 56, 58 and 59									
AIR PT Round	AIR PT AR046	AIR PT AR049	AIR PT AR050	AIR PT AR052	AIR PT AR053	AIR PT AR055	AIR PT AR056	AIR PT AR058	AIR PT AR059
Round conducted in the period	Sept-Oct 2021	January – February 2022	May – June 2022	July – August 2022	September – October 2022	January – February 2023	May – June 2023	July – August 2023	September – October 2023
Gradko International	100%	100%	100% [1]	100%	100%	100%	100%	100%	100%

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Blackburn with Darwen recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation. However, as per table C.1 the automatic monitoring from CM2 required some annualisation.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Particulate Matter	Annualisation Factor Blackpool Marton	Annualisation Factor Glazebury	Annualisation Factor Preston	Annualisation Factor Salford Eccles	Average Annualisation Factor	Raw Data Annual Mean µg/m3	Annualised Annual Mean µg/m3	Annual Average data from nearby sites µg/m3
CM2	PM10	0.92	1.01	1.00	1.02	0.99	11.1	11	12.5
CM2	PM2.5	1.04	1	1	0.97	1	6.97	7	7.3

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Blackburn with Darwen have applied a local bias adjustment factor of 0.7 to the 2023 monitoring data. A summary of bias adjustment factors used by Blackburn with Darwen over the past five years is presented in Table C.2.

The co-location study was undertaken at automatic monitoring location CM1. Automatic monitoring results were obtained using a chemiluminescence analyser. The decision to use the local bias factor was influenced by the following:

- The 2023 local factor of 0.7 is similar to the local factor obtained for the preceding five years
- The co-location trial has "Good Overall" tube precision and "Good Overall" hourly data capture.
- The automatic monitor and data are managed to national AURN standards.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	-	0.7
2022	Local	-	0.75
2021	Local	-	0.75

2020	Local	-	0.71
2019	Local	-	0.74

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	10	-	-	-	-
Bias Factor A	0.7 (0.65 - 0.75)	-	-	-	-
Bias Factor B	43% (33% - 53%)	-	-	-	-
Diffusion Tube Mean ($\mu g/m^3$)	421.8	-	-	-	-
Mean CV (Precision)	2	-	-	-	-
Automatic Mean ($\mu g/m^3$)	15.3	-	-	-	-
Data Capture	100%	-	-	-	-
Adjusted Tube Mean ($\mu g/m^3$)	15 (14-16)	-	-	-	-

Notes:

A single local bias adjustment factor has been used to bias adjust the 2023 diffusion tube results.

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO$_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO$_2$ concentrations corrected for distance are presented in Table B.1.

Most of the 2023 monitoring locations were representative of exposure Blackburn with Darwen Borough Council, with the exception of five locations (DT8, DT19, DT32, DT46 and DT47/48/49). However, the NO_2 concentration at the nearest relevant receptor has not been calculated for these exceptions because the concentration is less than 36µg/m3.

QA/QC of Automatic Monitoring

- Blackburn with Darwen Borough Council undertake the Local Site Operator (LSO) duties for the automatic monitoring site CM1 & CM2;
- LSO calibrations were undertaken as instructed by Bureau Veritas on behalf of the Environment Agency (monthly throughout 2023), and servicing/audits were arranged by Bureau Veritas in accordance with the national network requirements.
- The 2023 automatic monitoring data reported in this report has been verified for the full calendar year for CM1, and from the commissioning of the CM2 site in September 2023.
- Live/historic data is available at https://uk-air.defra.gov.uk/data/data_selector

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

The type of PM_{10} and $PM_{2.5}$ monitor(s) utilised within Blackburn with Darwen Borough Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

Data from CM2 at Audley Park covered the period from 1st September 2023 to 31st December 2023 as the site was only commissioned in September 2023. As such, the data capture was >25% but <75% of the calendar year. Therefore, having consulted the LAQM Helpdesk, it has been necessary to annualise the data for PM_{10} and $PM_{2.5}$. Annualisation has been undertaken in accordance with the guidance presented in LAQM TG(22) section 7.140 and Box 7-9 as advised by the Helpdesk.

Initially, data was sought from nearby (within 50 miles) continuous monitors with sufficient data capture to make a meaningful comparison. Four sites were utilised in the comparison, three of which were also urban background sites within the north-west of England region (Blackpool Marton, Preston and Salford Eccles). One site at Glazebury was used in the comparison although it was a rural background site. However, box 7-9 of the guidance in LAQM.TG(22) notes that the site can be any background site for comparison purposes.

All of the sites formed part of the AURN network and were therefore subject to the same level of QA/QC. Data for the sites was taken from the DEFRA UK-Air website ([Data Archive - Defra, UK](#)). All sites were considered appropriate and comparable with the Audley Park site due to their location in the north-west region, and their classification as background sites (in most cases urban background). The sites at Blackpool, Preston and Salford Eccles had a 100% data capture for PM10, whilst the site at Glazebury had 99% data capture. All sites also used a FIDAS monitor to collect the data, again providing a further control on the data.

Table C.4: PM10 Annualisation for Continuous Monitoring Data

Background Site	Annual Mean 2023 (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Blackpool Marton	12	13	0.92
Glazebury	10.6	10.5	1.01
Preston	11.8	11.8	1.00
Salford Eccles	15	14.7	1.02
Average (Ra)			0.99

Table C.5: PM2.5 Annualisation for Continuous Monitoring Data

Background Site	Annual Mean 2023 (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Blackpool Marton	7	6.7	1.04
Glazebury	6.5	6.5	1
Preston	6.9	6.9	1
Salford Eccles	8.6	8.9	0.97
Average (Ra)			1.00

Once the annualisation was completed as per TG(22), the annualised data was compared against the chosen background sites in order to 'sense check' the data. The annual average PM10 data for the sites at Blackpool, Preston, Salford and Glazebury were comparable to the annualised data from CM2 ($12\mu g/m^3$, $12\mu g/m^3$, $15\mu g/m^3$ & $11\mu g/m^3$ respectively). This exercise was repeated for the PM2.5 annualised data. Annual averages for the sites used in the annualisation are presented in table C.1. Based on this final comparison which demonstrated that the annualisation had a close correlation with the annual average data from the nearby sites, the data was considered suitable for publication within the report.

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the NO$_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO$_2$ concentrations corrected for distance are presented in Table A.3.

No automatic NO2 monitoring locations within Blackburn with Darwen Borough Council required distance correction during 2023.

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

Figure D.1 – Map of Non-Automatic Monitoring Site
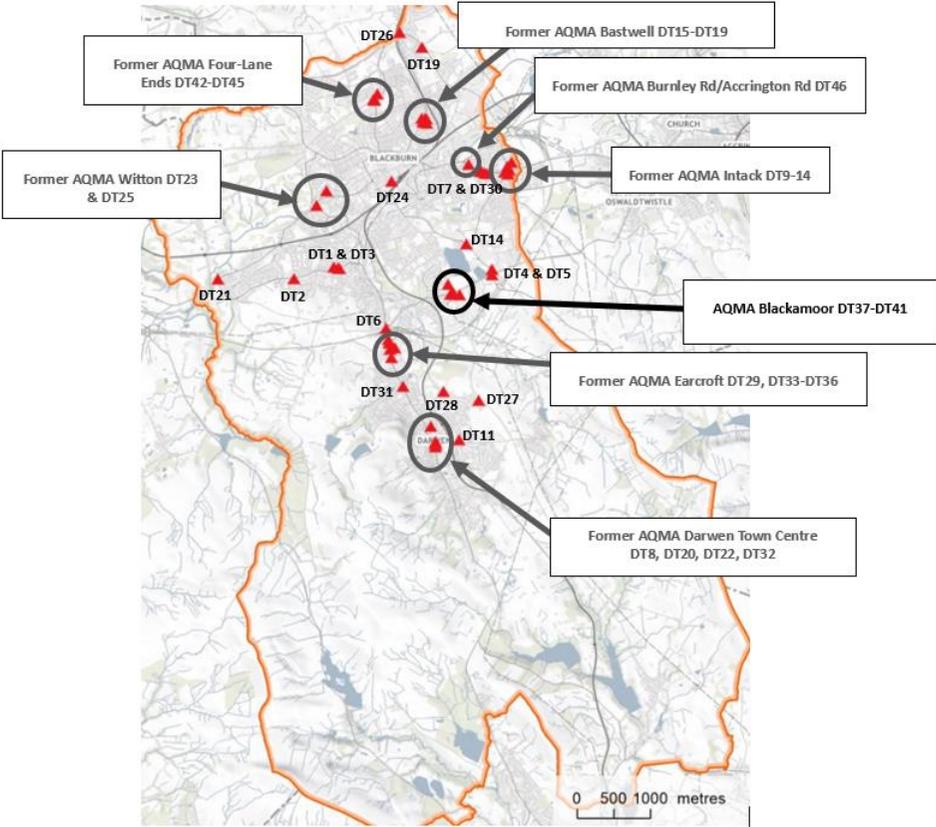
Former AQMA Intack
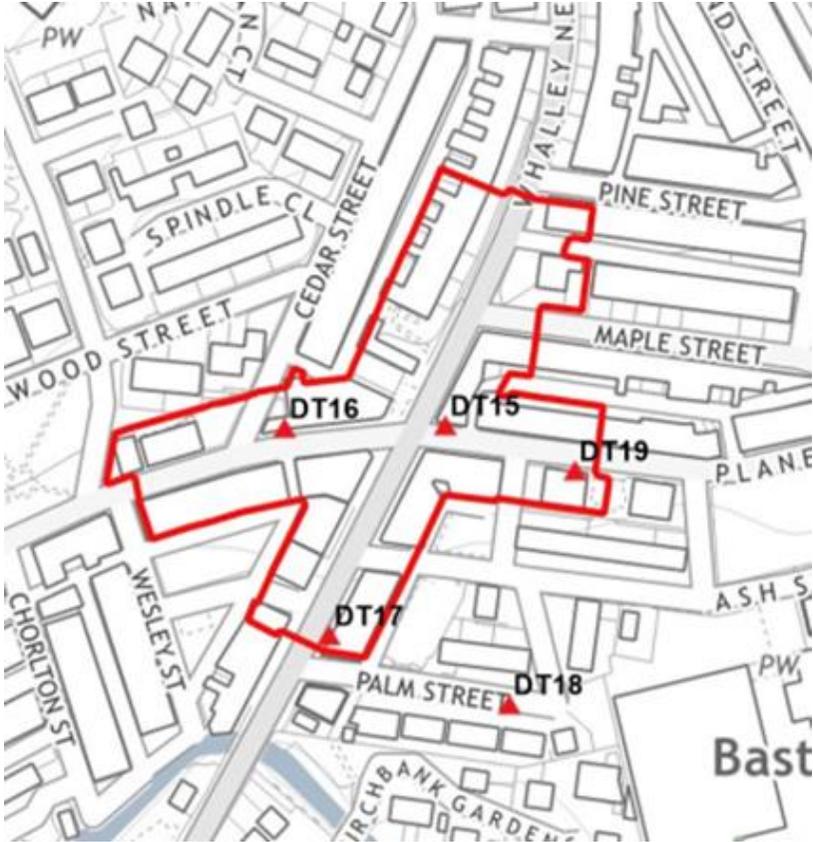
Former Bastwell AQMA

Former Witton AQMA
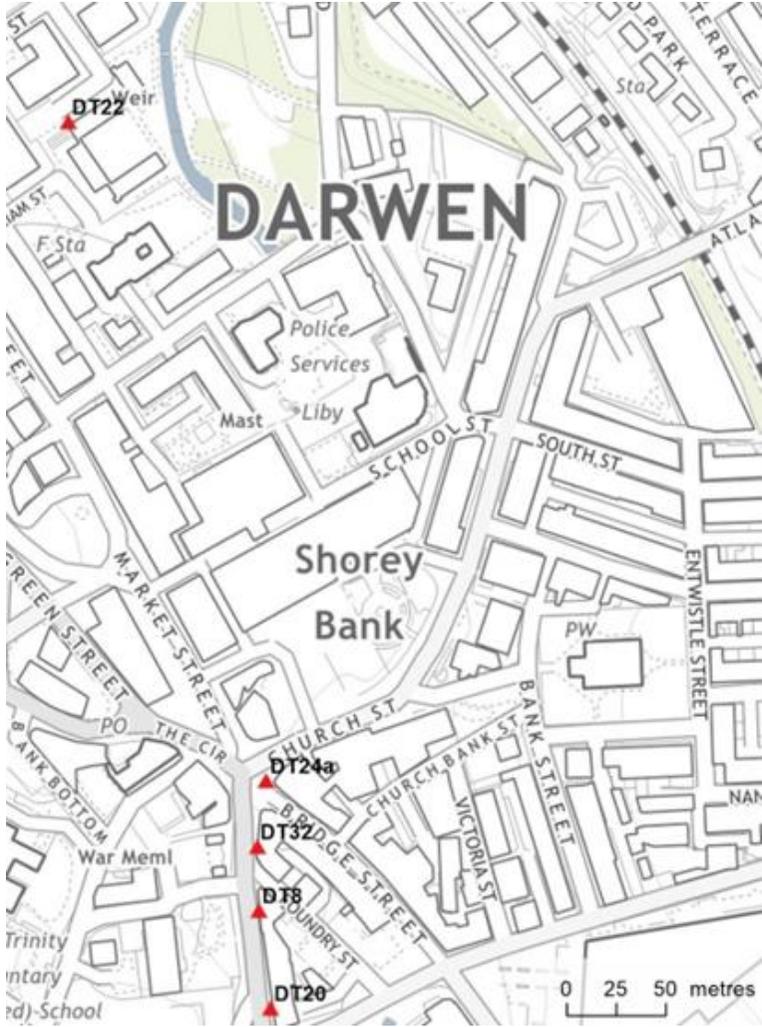
Former Darwen Town Centre AQMA

Former Earcroft AQMA
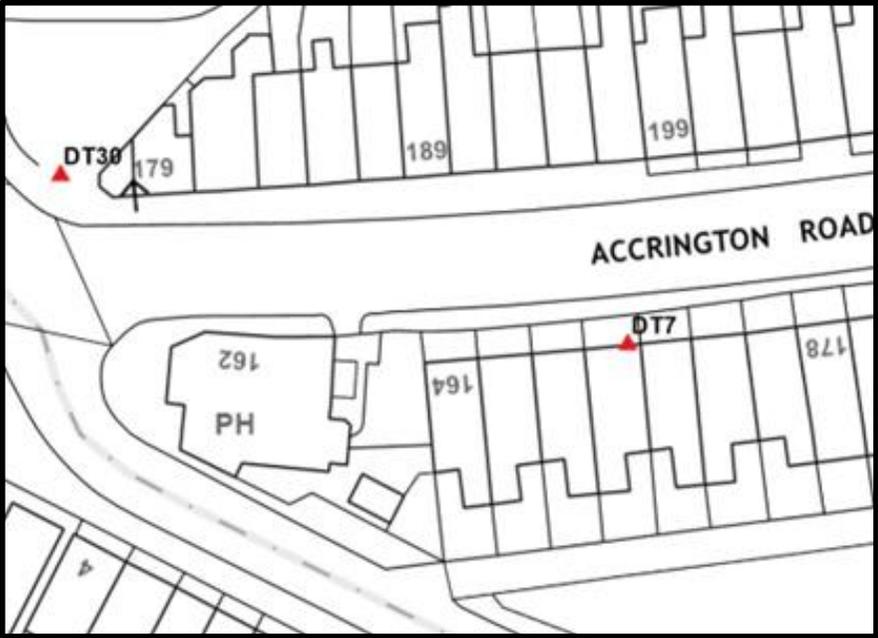
Blackamoor AQMA

Former Four Lane Ends AQMA

Maps of Other Diffusion Tube Monitors Not Located in the AQMA/Former AQMA
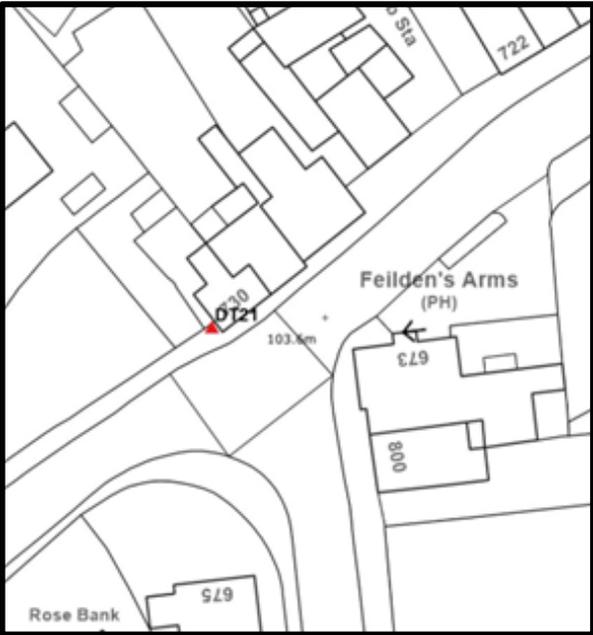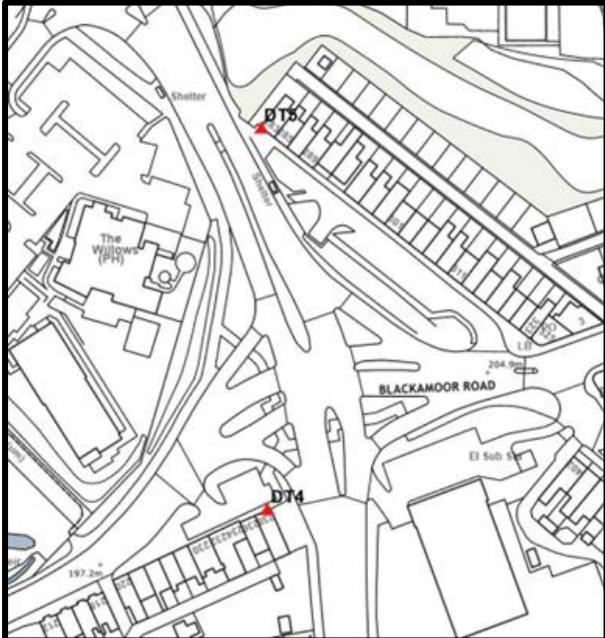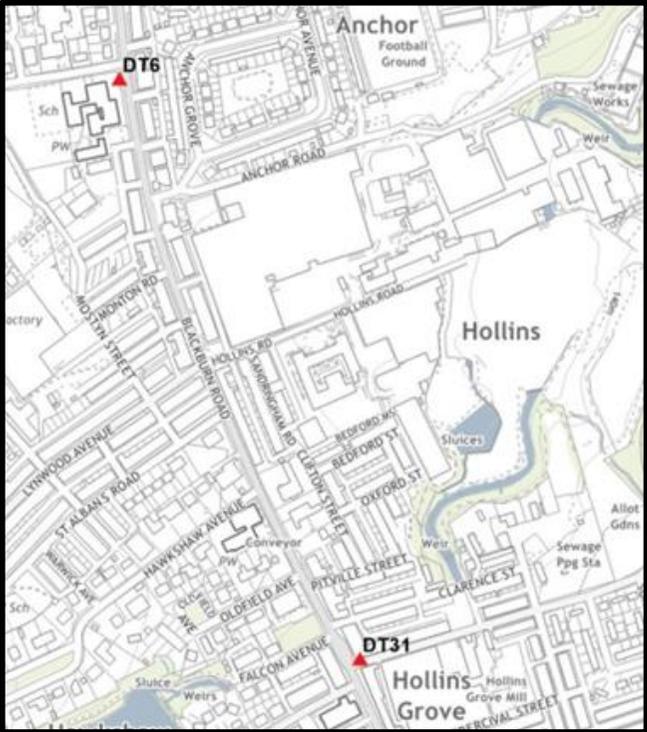

Feniscowles
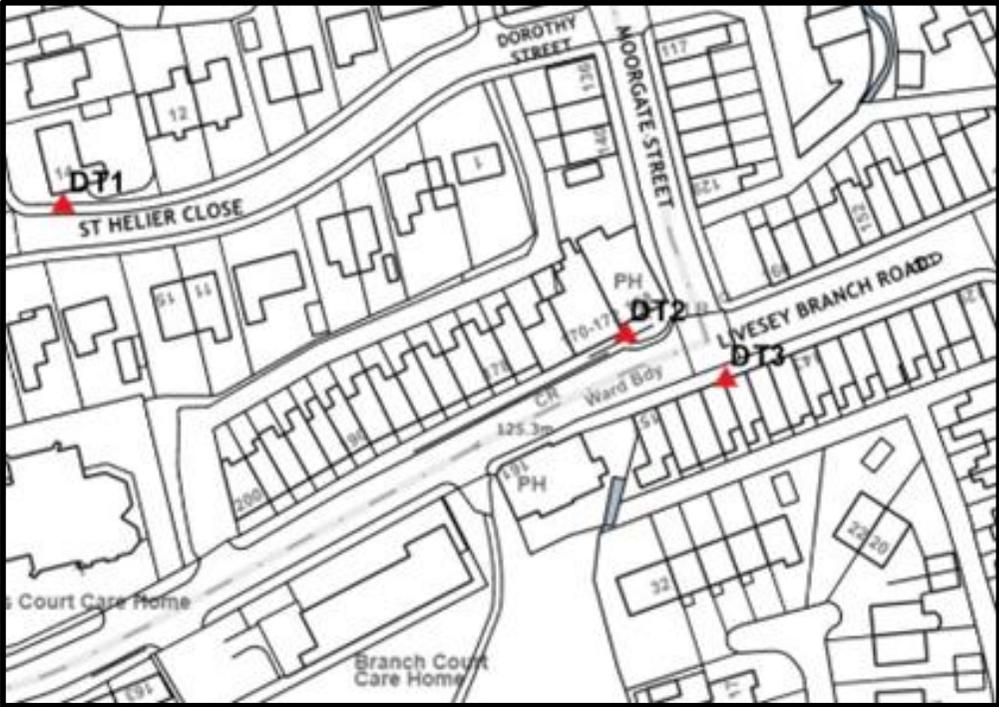
Brownhill
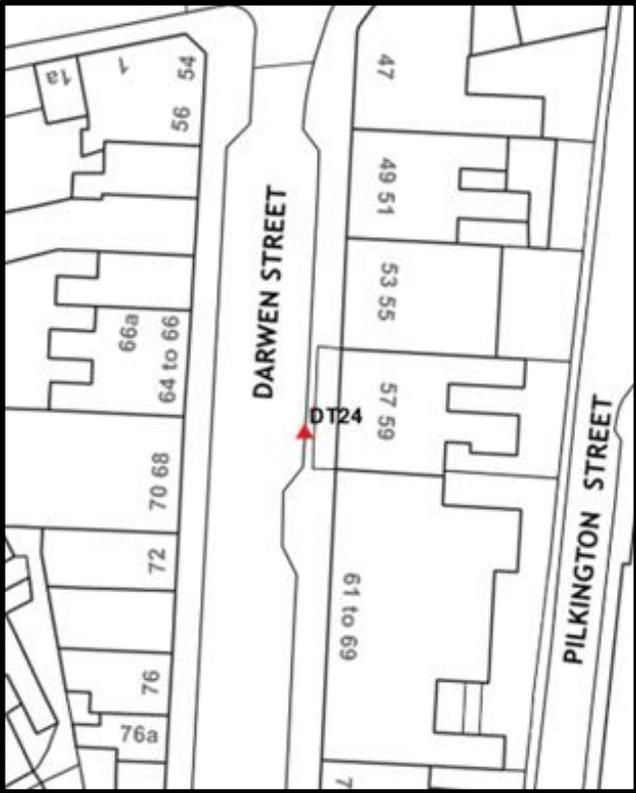
Toll Bar

Guide

Birch Hall/Hollins Grove
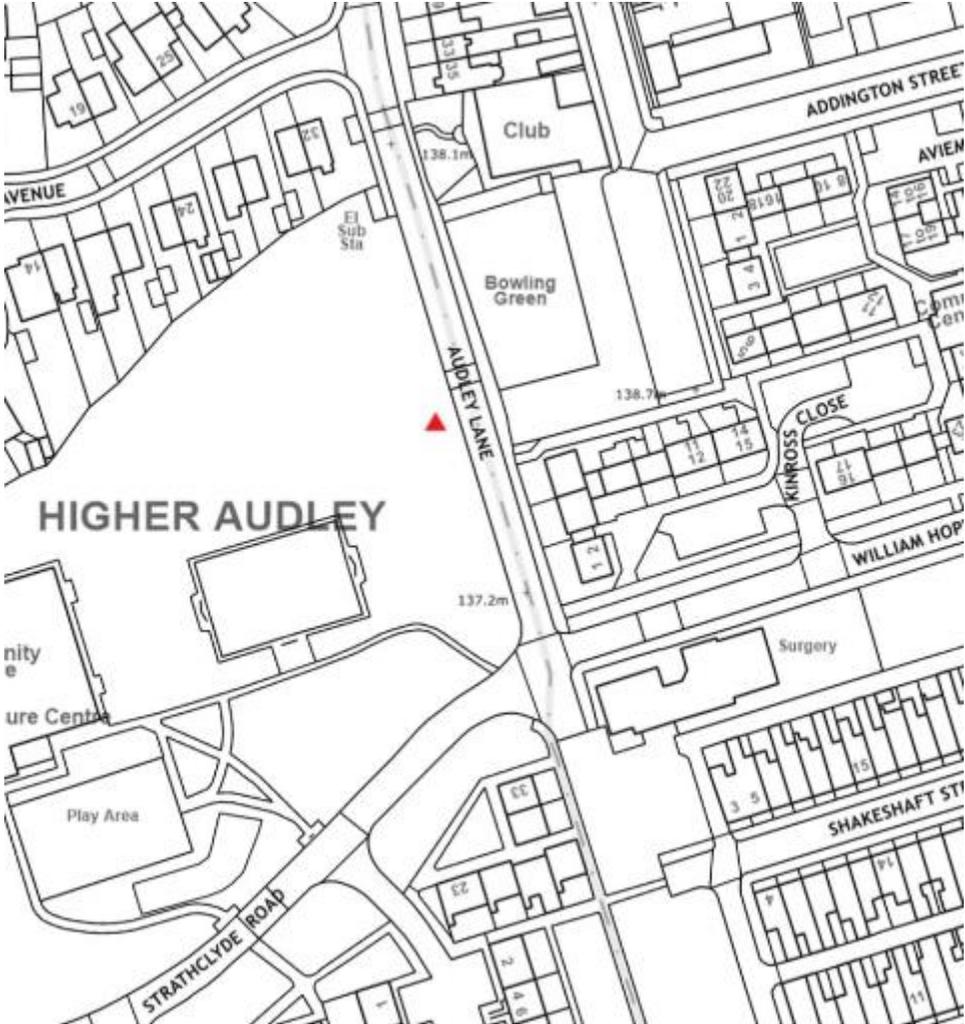

Moorgate/Livesey Branch Rd

Darwen Street

Figure D.2 – Map of Automatic Monitoring Sites

CM1 Continuous Monitoring Site

CM2 Continuous Monitoring Site

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[17]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO$_2$)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO$_2$)	40µg/m^3	Annual mean
Particulate Matter (PM$_{10}$)	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM$_{10}$)	40µg/m^3	Annual mean
Sulphur Dioxide (SO$_2$)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO$_2$)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO$_2$)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix F: Local engagement hyperlink addresses

- Car sharing - https://www.bwdconnect.org.uk/travel-choices/car-sharing/car-sharing-registration/
- Finding electric vehicle charging points - https://www.zap-map.com/live/
- Electric vehicles – government grants - https://www.gov.uk/plug-in-car-van-grants
- Vehicles eligible for the Electric Vehicle Homecharge Scheme - https://www.gov.uk/government/publications/electric-vehicle-homecharge-scheme-eligible-vehicles
- Household Waste Disposal Centres - https://www.blackburn.gov.uk/waste-and-recycling/household-waste-recycling-centres
- Bulky Item Collection - https://www.blackburn.gov.uk/waste-and-recycling/bulky-item-collection
- Garden fires - Advice - https://www.blackburn.gov.uk/environment/pollution/bonfires
- Stove and fireplace information - https://burnright.co.uk/
- Smoke Control Areas - https://www.blackburn.gov.uk/environment/pollution/smoke-control-areas
- Energy advice - https://www.blackburn.gov.uk/housing/energy-advice
- Grants to save energy - https://www.gov.uk/improve-energy-efficiency

Glossary of Terms

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

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.