

Blackpool Council



2023 Air Quality Annual Status Report (ASR)

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

October 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Blackpool

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

Blackpool Council works with a partners including Public Health, Environment Agency and Blackpool Transport to improve local air quality.

There is one Air Quality Management Area within the Borough of Blackpool which expands across Blackpool Town Centre. This was declared in 2005 due to the exceedance in the annual mean nitrogen dioxide (NO₂) concentration above the national air quality objective. Details of the AQMA declaration can be found on the UK AIR website: [Blackpool AQMA Details](#).

NO₂ concentrations are measured primarily within and around the Blackpool AQMA, and the monitoring data between 2018-2022 shows that NO₂ concentrations are in compliance with the NO₂ national air quality objective of 40 µg/m³. In 2022, the highest recorded NO₂ concentration recording across Blackpool Council's monitoring network was at DF14 (6 Grosvenor Street) with a value of 21.7 µg/m³, and there were no measured exceedances of the annual mean NO₂ objective.

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

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

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

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

Although no exceedances were monitored between 2018-2022, DF5 (located at the former Talbot Road Bus Station) measured the annual mean NO₂ concentration to be a value of 39 µg/m³ in 2018, which is within 10% of the annual mean NO₂ objective. The LAQM Technical Guidance (LAQM.TG22 Section 3.53 – 3.65)⁵ states that the revocation of an AQMA can be considered following three consecutive years of annual mean concentrations being lower than 36 µg/m³ (i.e. within 10% of the annual mean NO₂ objective). Monitoring at this site has been temporarily suspended since 2020 due to ongoing construction works and will be reinstated once the construction site hoarding has been removed. Three full years of monitoring data at this site (2024-2026) will provide evidence as to whether the Blackpool AQMA can be revoked.

Monitoring data from the diffusion tube monitoring sites within the Blackpool Council area show a downward trend in NO₂ concentrations between 2018-2022. In general, NO₂ concentrations in 2022 are slightly increased compared to 2021 and 2020, but monitoring data from 2020 and 2021 do not represent standard years due to the COVID-19 pandemic and associated lockdowns. The monitoring data in 2022 shows a reduction in NO₂ concentrations from the year 2019 and the year 2022 at all monitoring sites. This is reflective of national trends.

At the time of writing, Blackpool Council conducted a public consultation in Summer 2023 on the Blackpool Air Quality Strategy (AQS) and the Air Quality Action Plan (AQAP) 2023-2028.

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 Plan⁶ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and

⁵ Defra. Local Air Quality Management Technical Guidance (TG22), August 2022

⁶ Defra. Environmental Improvement Plan 2023, January 2023

reduce PM_{2.5} in their areas. The Road to Zero⁷ details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Two key areas of ongoing action in Blackpool are:

- There are many ongoing active travel projects in Blackpool such as Walk to School / Walk to Work, and The Big Bike Revival. Such projects encourage residents and visitors to travel in and around Blackpool on foot or by bicycle. [Active Blackpool](#) and [Active Lancashire](#), as well as other partner organisations, play a big role in implementing these projects.

Image 1. A bicycle fixing event held as part of Big Bike Revival.



⁷ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Image 2. Example of a guided bicycle ride.



- The council has recently worked with the Lancashire Enterprise Partnership to implement the Town Centre Quality Corridors scheme, which has delivered improvements to the town centre public realm. The Town Centre Strategy and Action Plan, which was updated in 2022, also aims to adopt a 'pedestrian first' approach to planning. This will encourage residents and visitors to travel in to and around the Town Centre on foot, instead of by car.

Image 3. Town centre public realm improvements made to Edward Street (left) and Church Street (right).



Conclusions and Priorities

There is currently one AQMA in place within Blackpool Council that extends across Blackpool Town Centre. Monitoring data from 2022 shows that there were no exceedances of the annual mean NO₂ objectives at the monitoring site locations in Blackpool Council. In 2022, the highest recorded NO₂ concentration recording across Blackpool Council's monitoring network was 21.7 µg/m³.

Monitoring data between 2018-2022 shows that NO₂ concentrations have generally reduced. In general, NO₂ concentrations in 2022 are slightly increased compared to 2021 and 2020, reflective of national trends due to the COVID-19 pandemic and associated lockdowns. However, the monitoring data in 2022 shows a reduction in NO₂ concentrations from 2019 to 2022 at all monitoring sites.

Although no exceedances were monitored between 2018-2022, DF5 (the former Talbot Road Bus Station), measured the annual mean NO₂ concentration to be a value of 39 µg/m³ in 2018, which is within 10% of the annual mean NO₂ objective. The LAQM Technical

Guidance (LAQM.TG22 Section 3.53 – 3.65)⁵ states that the revocation of an AQMA can be considered following three consecutive years of annual mean concentrations being lower than $36 \mu\text{g}/\text{m}^3$ (i.e. within 10% of the annual mean NO_2 objective). Monitoring at this site has been temporarily suspended since 2020 due to ongoing construction works and will be reinstated once the construction site hoarding has been removed. Three full years of monitoring data at this site (2024-2026) will provide evidence as to whether the Blackpool AQMA can be revoked.

To improve air quality, Blackpool Council are committed to implementing and reviewing the actions in Blackpool Air Quality Strategy and Blackpool Air Quality Action Plan 2023-2028. This will be done by cross-collaboration between the Environmental Protection and the Strategy and Climate teams.

Local Engagement and How to get Involved

Everyone can contribute to improving the air we breathe by making simple changes to we carry out our daily activities. Below are some changes that members of the public in Blackpool Council could make to their daily routine to reduce air pollutant emissions and to improve their exposure to poor air quality.

Road vehicles

- Switch your engine off when you are parked or waiting in traffic for long periods of time.
- Switch to public transport alternatives as often as possible. Blackpool's bus fleet is newly upgraded with smart new technology, and there is free Wi-Fi on buses and trams.
- If you are buying a new vehicle, switch to a less polluting option such as a hybrid or electric vehicle.
- Be conscious of your fuel-efficiency whilst driving, by accelerating gently and maintaining a steady speed.

Active transport

- Travel via less busy roads where air pollution is concentrated.
- If possible, travel before rush hour before air pollution builds up, or after rush hour when it is less congested.
- As much as possible, leave your car at home and switch to public transport, cycling, or walking.

- Walk on the inside of the pavement which is further away from polluting sources.
- Check air pollution forecasts in your area to know when air quality is poor
- For tourists, the [Visit Blackpool](#) website encourages exploration of Blackpool via active travel options, providing information on getting around Blackpool by foot,⁸ and by bicycle,⁹ including eBike hire.¹⁰

Indoor air quality

- Ensure that fuel-burning appliances are efficient, well-maintained, and frequently serviced.
- Open your windows for ventilation when you are cooking, cleaning, or smoking inside your home.
- Burn less fuel in your home by insulating your home or turning your thermostat down.
- Reduce wood-burning in your home and garden, and ensure that your stove is Defra-approved, and your wood is well-seasoned.

The following table provides a list of useful resources which can be used to gain further information on air quality, climate change and active travel.

Table 1.1: Useful resources on air quality, climate change, and active travel.

Tool / resource	Description	Link
Blackpool Council Air Quality Management	Information on Blackpool Council's Local Air Quality Management Activities	https://www.blackpool.gov.uk/Residents/Planning-environment-and-community/Environmental/Air-quality-management.aspx
JSNA Blackpool	Information on air quality and associated health impacts in Blackpool	https://www.blackpooljsna.org.uk/People-and-Places/Wider-determinants-of-health/Air-Quality.aspx
NICE Indoor Air Quality Guidance	Guidance on the importance of good air quality in people's homes and how to achieve this	https://www.nice.org.uk/guidance/ng149

⁸ Getting Around Blackpool: By Foot, Visit Blackpool, <https://www.visitblackpool.com/plan-your-trip/getting-around/by-foot/>

⁹ Getting Around Blackpool: By Bicycle, Visit Blackpool, <https://www.visitblackpool.com/plan-your-trip/getting-around/by-bike/>

¹⁰ Blackpool eBike Hire, <https://www.blackpoolebikehire.com/>

Tool / resource	Description	Link
Defra Air Pollution Forecast	Defra's air pollution forecast tool provides the latest outlook for air quality across the UK	https://uk-air.defra.gov.uk/forecasting/
Public Health England	Information about the health impacts of air pollution	https://www.gov.uk/Government/publications/health-matters-air-pollution/health-matters-air-pollution
The Carbon Trust	Organisations such as The Carbon Trust help business and the public sector cut emissions	https://www.carbontrust.com/
Visit Blackpool	Guidance on getting around Blackpool on foot, by bicycle, and using public transport	https://www.visitblackpool.com/
Bicycle and e-bicycle hire	Information on hiring bikes in Blackpool	https://www.blackpoolebikehire.com/
Sustrans	Provides information on the National Cycle Network and resources to help with taking up cycling	https://www.sustrans.org.uk/national-cycle-network
Cosy Homes in Lancashire	Provides information on the Cosy Homes in Lancashire scheme, including how to apply and what's available in your area	https://www.chil.uk.com/
Household bonfires and smoke nuisance	Provides information on household bonfires and how to report them as a nuisance	https://www.blackpool.gov.uk/Residents/Planning-environment-and-community/Environmental/Household-bonfires-and-smoke-nuisance.aspx

Local Responsibilities and Commitment

This ASR was prepared by Ricardo for Blackpool Council.

If you have any comments on this ASR please send them to climate@blackpool.gov.uk

Table of Contents

Executive Summary: Air Quality in Our Area	i
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
2.1 Air Quality Management Areas	2
2.2 Progress and Impact of Measures to address Air Quality in Blackpool Council	4
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations	6
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	9
3.1 Summary of Monitoring Undertaken	9
3.1.1 Automatic Monitoring Sites	9
3.1.2 Non-Automatic Monitoring Sites	9
3.2 Individual Pollutants	9
3.2.1 Nitrogen Dioxide (NO ₂)	10
3.2.2 Particulate Matter (PM ₁₀)	11
3.2.3 Particulate Matter (PM _{2.5})	11
3.2.4 Sulphur Dioxide (SO ₂)	12
Appendix A: Monitoring Results	13
Appendix B: Full Monthly Diffusion Tube Results for 2022	28
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	29
Appendix D: Map(s) of Monitoring Locations and AQMAs	33
Appendix E: Summary of Air Quality Objectives in England	38
Glossary of Terms	39
References	40

Figures

Figure 2.1 – Primary emissions sources within Blackpool for PM _{2.5}	7
Figure A. 1 – Trends in Annual Mean NO ₂ Concentrations.....	19
Figure A. 2 – Trends in Annual Mean NO ₂ Concentrations in Blackpool Town Centre AQMA	20
Figure A. 3 – Trends in Annual Mean PM ₁₀ Concentrations in Blackpool	23
Figure A. 4 – Trends in Number of 24-Hour Mean PM ₁₀ Results > 50µg/m ³	25
Figure A. 5 – Trends in Annual Mean PM _{2.5} Concentrations in Blackpool.....	27
Figure D.1 - Map of Non-Automatic and Automatic Monitoring Sites.....	33
Figure D.2 - Map of Monitoring Sites in and surrounding Blackpool Town Centre AQMA .	34
Figure D.3 - Map of DF17 (29 Lakeway) monitoring site	35
Figure D.4 - Map of DF20, DF21, DF22 non-automatic monitoring sites and Blackpool Marton AURN	36
Figure D.5 - Map of DF19 (Oxford Square) monitoring site	37

Tables

Table 1.1: Useful resources on air quality, climate change, and active travel.....	vii
Table 2.1 – Declared Air Quality Management Areas.....	3
Table A.1 – Details of Automatic Monitoring Sites	13
Table A.2 – Details of Non-Automatic Monitoring Sites	14
Table A.3 – Annual Mean NO ₂ Monitoring Results: Automatic Monitoring (µg/m ³).....	16
Table A.4 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)	17
Table A.5 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	21
Table A.6 – Annual Mean PM ₁₀ Monitoring Results (µg/m ³)	22
Table A.7 – 24-Hour Mean PM ₁₀ Monitoring Results, Number of PM ₁₀ 24-Hour Means > 50µg/m ³	24
Table A.8 – Annual Mean PM _{2.5} Monitoring Results (µg/m ³).....	26
Table B.1 – NO ₂ 2022 Diffusion Tube Results (µg/m ³)	28
Table C.1 – Annualisation Summary (concentrations presented in µg/m ³).....	30
Table C.2 – Bias Adjustment Factor	31
Table E.1 – Air Quality Objectives in England	38

1 Local Air Quality Management

This report provides an overview of air quality in the Borough of Blackpool during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Blackpool 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 Blackpool Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Blackpool Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of the 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:

- NO₂ annual mean.

Although no exceedances were monitored between 2018-2022, DF5 (Talbot Road Bus Station, located at the former site of the bus station), measured the annual mean NO₂ concentration to be a value of 39 µg/m³ in 2018, which is within 10% of the annual mean NO₂ objective. The LAQM Technical Guidance (LAQM.TG22 Section 3.53 – 3.65)⁵ states that the revocation of an AQMA can be considered following three consecutive years of annual mean concentrations being lower than 36 µg/m³ (i.e. within 10% of the annual mean NO₂ objective). Monitoring at this site has been temporarily suspended since 2020 due to ongoing construction works and will be reinstated once the construction site hoarding has been removed. Three full years of monitoring data at this site (2024-2026) will provide evidence as to whether the Blackpool AQMA can be revoked.

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
Blackpool AQMA	01/07/2005	NO ₂ Annual Mean	Located on school grounds next to playing fields with some nearby residential properties.	NO	>40 µg/m ³	21.7 µg/m ³	Five years	Visit the AQAP for Blackpool AQMA	Visit the AQAP for Blackpool AQMA

Blackpool Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

Blackpool Council confirm that all current AQAPs have been submitted to Defra.

Nb. Blackpool Council are in the process of finalising the draft AQAP at the time of publishing the ASR.

2.2 Progress and Impact of Measures to address Air Quality in Blackpool Council

Blackpool Council has recently delivered a number of measures to improve air quality including:

The Blackpool Tramway Extension Scheme – Phase 2 of the Talbot Gateway, connects the tramway to Blackpool North railway station from the promenade, improving public transport links to Blackpool's seafront hotels and attractions, particularly the Pleasure Beach, and making commuting easier for residents, workers, and visitors. The tramway extension provides a valuable light rail complement to the bus network and can help reduce congestion and parking pressures on the town centre. Updates on the progress of the Talbot Gateway can be found on the Blackpool Council website.¹¹

Two integrated traffic management schemes have been delivered. Variable message signage is now directing drivers to the car park spaces that are available, reducing the need to search multiple car parks for spaces and saving drivers time and fuel, whilst reducing congestion. State-of-the-art traffic guidance and queue management systems have also been installed. Both schemes reduce congestion and idling, thereby reducing exhaust emissions of air pollutants.

[Active Blackpool](#) and [Active Lancashire](#) play a big role in supporting physical activity in Blackpool, including by partnering with other organisations on some of the many ongoing active travel projects in Blackpool such as Walk to School / Walk to Work, and The Big Bike Revival.

Cosy Homes in Lancashire was developed by the 14 Local Authorities in Lancashire following a comprehensive energy efficiency study commissioned by Blackpool Public Health. The Cosy Homes in Lancashire team are currently based in Public Health at Blackpool Council and during 2021/22 and 2022/23 Cosy Homes helped 2,400 households to access the Green Home Grant.

¹¹ Talbot Gateway, <https://www.blackpool.gov.uk/Your-Council/Creating-a-better-Blackpool/Talbot-Gateway.aspx>

Under the [Climate Emergency Action Plan](#), a number of actions to improve the energy efficiency of homes in our town are being undertaken, in order to reduce carbon emissions; these actions will also have benefits for air pollution as the need for heating is reduced.

[Blackpool's EV Strategy](#) underwent consultation during October to December 2022¹² and was subsequently approved in February 2023.¹³ The EV Strategy sets out the vision for provision of adequate EV charging infrastructure throughout Blackpool over the Strategy's forecast period, to 2027.

The [Local Plan Part 2: Site allocations and development management policies](#) has been adopted and the proactive management of developments from the beginning of the planning process is outlined in many of its policies. This includes requirements to ensure suitable public transport provision and active travel networks in all new developments, including to connect between developments, and provision of EV charging infrastructure in all new developments.

Blackpool Council's priorities for the coming year are:

- Improving air quality in the AQMA and providing evidence to demonstrate this, so that the AQMA can be revoked in the future.
- Improving air quality monitoring and communications, to ensure our residents and visitors are informed about local air quality.
- Reducing particulate matter (PM_{2.5}) emissions.

Blackpool Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Lancashire County Council
- Fylde Council
- Blackpool Transport Services
- Cosy Homes in Lancashire

¹² Electric Vehicle (EV) Strategy 2022-2027 Consultation: Summary Report, Blackpool Council, December 2022, <https://democracy.blackpool.gov.uk/documents/s79397/Appendix%2010c%20-%20EV%20consultation%20report%20final.pdf>

¹³ Decision Number EX14/2023, Electric Vehicle Charging Strategy, 6 February 2023, <https://democracy.blackpool.gov.uk/documents/s79847/EX14%20Electric%20Vehicle%20Strategy.pdf>

The principal challenges and barriers to implementation that Blackpool Council anticipates facing include future disruption or delays that block full data collection across the AQMA sites. Progress on has been slower than expected due to data collection temporary suspension whilst regeneration works are taking place in the AQMA.

However, Blackpool Council anticipates that the measures stated above and those included in the upcoming Blackpool AQAP 2023-2028 will achieve continued compliance in Blackpool AQMA, so that monitoring data over the next few years (2024-2027) can provide sufficient evidence to revoke the AQMA.

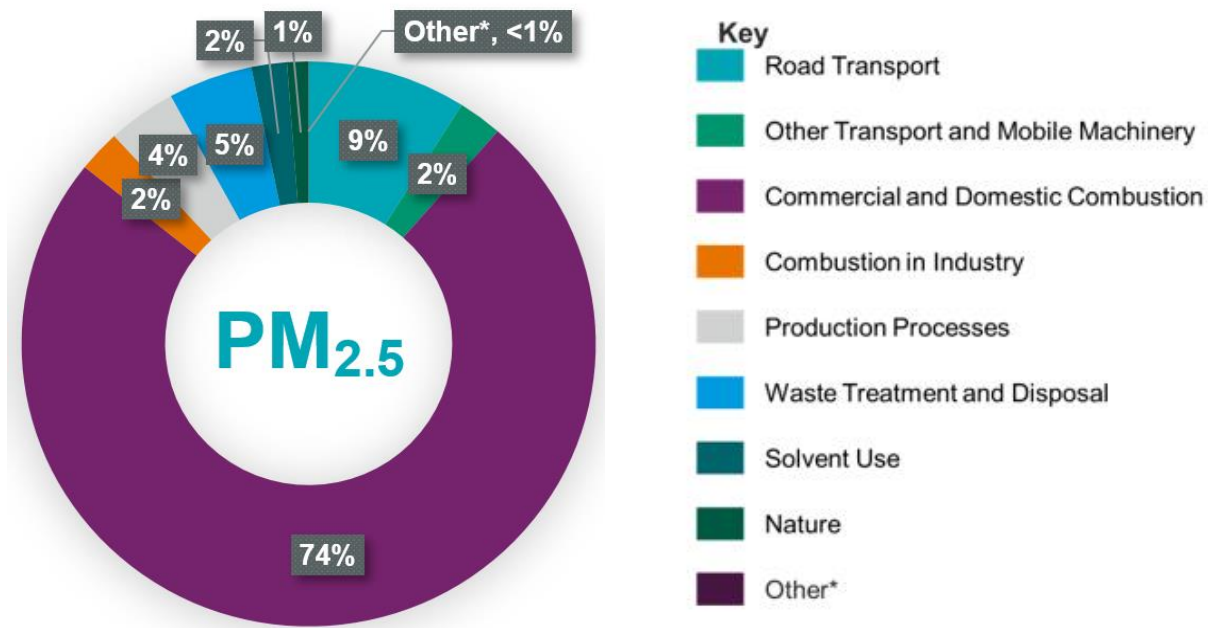
2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

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

Blackpool Council has one automatic monitoring station which measures annual mean PM_{2.5} concentration. Blackpool Marton monitoring site is an urban background site located on school grounds next to playing fields with some nearby residential properties. The annual mean PM_{2.5} concentration was measured at a value of 7.9 µg/m³ in 2022.

Source apportionment of PM_{2.5} emissions within Blackpool from the National Atmospheric Emissions Inventory data¹⁴ show that the largest source of PM_{2.5} is emitted from commercial and domestic combustion from gas, oil, and coal, forming around three-quarter of emissions of PM_{2.5} (Figure 2.1). Emissions from domestic combustion are often from appliances that burn carbon-containing fuels, such as some boilers, heaters, fires or wood burners, stoves, and ovens. Road transport is also an important source, forming 9% of PM_{2.5} emissions.

¹⁴ National Atmospheric Emissions Inventory, Emissions Maps 2020. <https://naei.beis.gov.uk/data/map-uk-das>

Figure 2.1 – Primary emissions sources within Blackpool for PM_{2.5}

(* Other relates to emissions from agriculture, forestry and land use change, and combustion in energy production and transformation.

Sourced from the 2020 National Atmospheric Emissions Inventory data¹⁴.

Blackpool Council has reviewed the fraction of mortality attributable to particulate air pollution (indicator D01) as published by Public Health England¹⁵. The fraction of mortality attributable to particulate air pollution in Blackpool in 2021 (the most recent year of data) was 5.9%. This is slightly higher than the regional and national averages of 5.3% and 5.5%, respectively.

Blackpool Council is taking the following measures to address PM_{2.5}, particularly in the domestic sector.

Reduce the need for heating by increasing energy efficiency of homes to reduce pollutant emissions from domestic heating and burning.

- As set out in the Climate Emergency Action Plan, Blackpool Council are exploring resources needed to enforce EPC ratings via landlord licensing scheme. This is set to be addressed via the Levelling Up funding targeting inner Blackpool, the package of measures which will include a “crackdown on rogue landlords”. The scheme will allow for additional resources for Category 1 Hazards – those that pose a serious and immediate risk to a person's health and safety – to be enforced.

¹⁵ Office for Health Improvement and Disparities, Public Health Outcomes Framework, May 2023

- Blackpool Council will continue to help deliver the Cosy Homes In Lancashire programme to tackle fuel poverty, making sure it contributes all it can to reducing emissions and increasing demand for zero emissions heating. The Council also plans to help eligible residents and landlords to make use of the Government's recently announced ECO+ Scheme, which will run from Spring 2023 for three years. The ECO+ Scheme is aimed at improving the UK's least energy-efficient homes, supporting households that are in lower Council Tax band areas and whose homes have an EPC rating of D or below.
- Under the Blackpool Climate Emergency Action Plan, the Council will also aim to accelerate delivery of insulation and glazing of all housing, reducing net energy demand.

Reduce pollutant emissions from domestic heating and burning by discouraging bonfires and open burning in Blackpool.

- Blackpool Council will develop a Bonfire Policy to inform residents about the human and environmental health impacts of bonfires. The focus of this policy will be on education around the issues and impacts, rather than an outright ban. This will enable residents to make better decisions around when, where, and how to have their bonfires, and potentially reduce the occurrence of bonfires.
- Blackpool Council will highlight Defra's Solid Fuel Burning Campaign (Burn Better) which aims to:
 - Raise awareness on open burning and indoor air quality.
 - Describe the issue of burning solid fuels (both inside and outside the home), including the types of fuels that are most problematic and how the way that fuels are burnt can influence emissions.
 - Explain how burning these fuels can affect human and environmental health, with a focus on air quality.
 - Provide information on how people can reduce their emissions contribution, for example by considering what is being burnt, the weather conditions, ventilation, etc.
- The Council will also consider how information and advice on the burning of solid fuels can be incorporated into the website page on 'Household bonfires and smoke nuisance' to raise awareness on the issue.

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

This section sets out the monitoring undertaken within 2022 by Blackpool Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Bureau Veritas operated automatic (continuous) monitoring at one site in Blackpool Council during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring site. The automatic monitoring results for Blackpool Council are available through the UK-Air website: https://uk-air.defra.gov.uk/data/flat_files?site_id=BLC2.

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

Blackpool Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 19 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40 µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200 µg/m³, not to be exceeded more than 18 times per year.

Between 2018-2022, there were no measured exceedances on the annual mean NO₂ air quality objective of 40 µg/m³. There were also no measured instances of NO₂ 1-Hour mean being above 200 µg/m³ between 2018-2022.

Monitoring data from the diffusion tube monitoring sites within the Blackpool Council area show a downward trend in NO₂ concentrations between 2018-2022. In general, NO₂ concentrations in 2022 are slightly increased compared to 2021 and 2020, but monitoring data from 2020 and 2021 do not represent standard years due to the COVID-19 pandemic and associated lockdowns and reduced traffic congestion. The monitoring data in 2022 shows a reduction in NO₂ concentrations from the year 2019 and the year 2022 at all monitoring sites, which is reflective of national trends.

Although no exceedances were monitored between 2018-2022, DF5 (located at the former Talbot Road Bus Station) measured the annual mean NO₂ concentration to be a value of 39 µg/m³ in 2018, which is within 10% of the annual mean NO₂ objective. The LAQM Technical Guidance (LAQM.TG22 Section 3.53 – 3.65)¹⁶ states that the revocation of an AQMA can be considered following three consecutive years of annual mean concentrations being lower than 36 µg/m³ (i.e. within 10% of the annual mean NO₂ objective). Monitoring at this site has been temporarily suspended since 2020 due to ongoing construction works and will be

¹⁶ Defra. Local Air Quality Management Technical Guidance (TG22), August 2022

reinstated once the construction site hoarding has been removed. Three full years of monitoring data at this site (2024-2026) will provide evidence as to whether the Blackpool AQMA can be revoked.

The council intends to review the locations of the monitoring stations and to increase the number of diffusion tubes and AURNs across Blackpool. This will provide a better representative of real-time data, and we will be able to extend the monitoring of air pollution more widely across residential areas in Blackpool.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. This was carried out by Bureau Veritas who operates the AURN site in Blackpool Council

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50 µg/m³, not to be exceeded more than 35 times per year.

PM₁₀ was measured between 2019-2022 at one automatic monitoring site in Blackpool Council. Blackpool Marton monitoring site is an urban background site located on school grounds next to playing fields with some nearby residential properties, just under 3 km from Blackpool Town Centre. There were no exceedances of the annual mean and 24-Hour objectives.

The annual mean PM₁₀ concentration was measured at a value of 13.6 µg/m³ in 2022, and there were four occasions where PM₁₀ 24-Hour mean concentrations was above 50 µg/m³ in 2022, which is well below the national air quality objective. There is no significant trend in the monitored annual mean and 24-Hour PM₁₀ concentration between 2019-2022.

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. This was carried out by Bureau Veritas who operates the AURN site in Blackpool Council.

Blackpool Council has one automatic monitoring station which measures annual mean PM_{2.5} concentration. Blackpool Marton monitoring site is an urban background site located on school grounds next to playing fields with some nearby residential properties. The annual

mean PM_{2.5} concentration was measured at a value of 7.9 µg/m³ in 2022, and there were no monitored exceedances. The 2022 annual mean shows a slight increase from the years 2020 (8.2 µg/m³) and 2021 (7.3 µg/m³) but shows a reduction from the year 2019 (9.2 µg/m³).

The recently published Environmental Targets (Fine Particulate Matter) (England) Regulations 2023¹⁷ requires the annual average PM_{2.5} concentration to not exceed 10 µg/m³ at any monitoring station in England by the end of 2040. The monitoring data over the past five years at Blackpool Marton monitoring site suggests that Blackpool Council are on track to achieve this target.

3.2.4 Sulphur Dioxide (SO₂)

SO₂ was not monitored in 2022.

¹⁷ Defra, 2023, Particulate matter (PM10/PM2.5) <https://www.gov.uk/government/statistics/air-quality-statistics/concentrations-of-particulate-matter-pm10-and-pm25>

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)
UKA00488	Blackpool Marton AURN	Urban Background	333768	434759	NO ₂ , PM ₁₀ , PM _{2.5} , O ₃ , NO, NO _x as NO ₂	No	Chemiluminescence	40	40	2.9

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 of kerb to nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DF1	92 Topping Street	Kerbside	331007	436283	NO ₂	Yes - Blackpool AQMA	2.0	0.9	No	2.7
DF2	58 Abingdon Street	Kerbside	330810	436432	NO ₂	Yes - Blackpool AQMA	16.0	3.1	No	2.9
DF3	15 Talbot Road	Roadside	330755	436431	NO ₂	Yes - Blackpool AQMA	11.0	1.0	No	2.7
DF4	Flashmans/Taboo Talbot Road	Roadside	330872	436494	NO ₂	Yes - Blackpool AQMA	2.3	1.1	No	2.6
DF5	Talbot Road Bus Station	Roadside	330968	436550	NO ₂	Yes - Blackpool AQMA	48.0	1.5	No	2.6
DF6	46 Dickson Road	Roadside	330812	436688	NO ₂	Yes - Blackpool AQMA	4.3	2.2	No	2.4
DF7	89 Dickson Road	Roadside	330700	436965	NO ₂	Yes - Blackpool AQMA	2.8	2.4	No	2.7
DF8	Regent Court (Promenade)	Roadside	330639	436703	NO ₂	No	11.0	0.8	No	2.7
DF9	Springfield (Promenade)	Kerbside	330647	436593	NO ₂	No	2.8	1.1	No	2.7
DF10	Springfield Rd Market	Roadside	330680	436584	NO ₂	No	14.0	1.0	No	2.9
DF11	The Mitre	Urban background	330630	436268	NO ₂	No	-	6.7	No	2.3
DF12	52 Springfield Road	Roadside	330915	436693	NO ₂	Yes - Blackpool AQMA	3.2	2.1	No	2.1

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 located with a Continuous Analyser?	Co-located with a Continuous Analyser?	Tube Height (m)
DF13	11 Lord Street	Kerbside	330879	436719	NO ₂	No	9.6	0.8	No		2.6
DF14	6 Grosvenor Street	Roadside	331287	436342	NO ₂	Yes - Blackpool AQMA	4.2	1.8	No		2.6
DF15	220 Church Street	Roadside	331300	436276	NO ₂	Yes - Blackpool AQMA	-	2.3	No		2.4
DF16	48 Cookson Street	Roadside	331162	436355	NO ₂	Yes - Blackpool AQMA	0.8	3.9	No		2.6
DF17	29 Lakeway	Roadside	332890	436849	NO ₂	No	6.0	1.1	No		2.1
DF18	306 Talbot Road	Roadside	331328	436963	NO ₂	No	18.6	3.6	No		2.4
DF19	Oxford Square	Roadside	332482	434614	NO ₂	No	-	1.3	No		2.9
DF20	AURN 1	Urban background	333771	434764	NO ₂	No	17.8	N/A	Yes		2.1
DF21	AURN 2	Urban background	333767	434758	NO ₂	No	19.3	N/A	Yes		2.1
DF22	AURN 3	Urban background	333775	434758	NO ₂	No	23.5	N/A	Yes		2.1

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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
UKA00488	333768	434759	Urban Background	99	99	12.5	12.2	9.2	10.1	9.8

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

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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 Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
DF1	331007	436283	Kerbside	100	34.6	25.8	18.9	-	-	17.6
DF2	330810	436432	Kerbside	92	90.4	27.0	26.9	14.5	15.9	19.2
DF3	330755	436431	Roadside	-	-	-	-	-	-	-
DF4	330872	436494	Roadside	-	-	-	-	-	-	-
DF5	330968	436550	Roadside	-	-	39.0	33.0	19.9	-	-
DF6	330812	436688	Roadside	92	90.4	26.0	24.5	16.7	19.1	20.3
DF7	330700	436965	Roadside	92	90.4	20.1	19.1	14.0	15.1	16.6
DF8	330639	436703	Roadside	50	50.0	23.1	19.4	14.2	15.8	14.9
DF9	330647	436593	Kerbside	50	50.0	24.8	21.1	14.6	15.8	16.9
DF10	330680	436584	Roadside	92	90.4	28.4	23.0	13.7	13.2	16.1
DF11	330630	436268	Urban background	92	90.4	25.1	22.2	15.1	16.3	18.4
DF12	330915	436693	Roadside	92	90.4	24.2	23.5	16.6	16.5	16.1
DF13	330879	436719	Kerbside	92	90.4	-	-	-	-	16.2
DF14	331287	436342	Roadside	92	90.4	28.0	27.2	18.7	20.6	21.7
DF15	331300	436276	Roadside	100	100.0	27.6	25.3	18.2	19.3	19.7
DF16	331162	436355	Roadside	100	100.0	24.3	22.2	15.1	16.8	17.5
DF17	332890	436849	Roadside	91	84.6	15.6	14.7	10.3	10.6	11.1
DF18	331328	436963	Roadside	92	90.4	22.6	22.8	16.2	17.2	18.3
DF19	332482	434614	Roadside	92	90.4	28.5	25.8	21.4	23.5	21.6
DF20	333771	434764	Urban background	100	100.0	13.2	14.2	10.5	12.1	13.3
DF21	333767	434758	Urban background	100	100.0	14.0	14.9	10.6	11.2	12.7
DF22	333775	434758	Urban background	92	90.4	14.9	14.4	10.0	12.7	13.6

☒ 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 µg/m³.

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**.

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

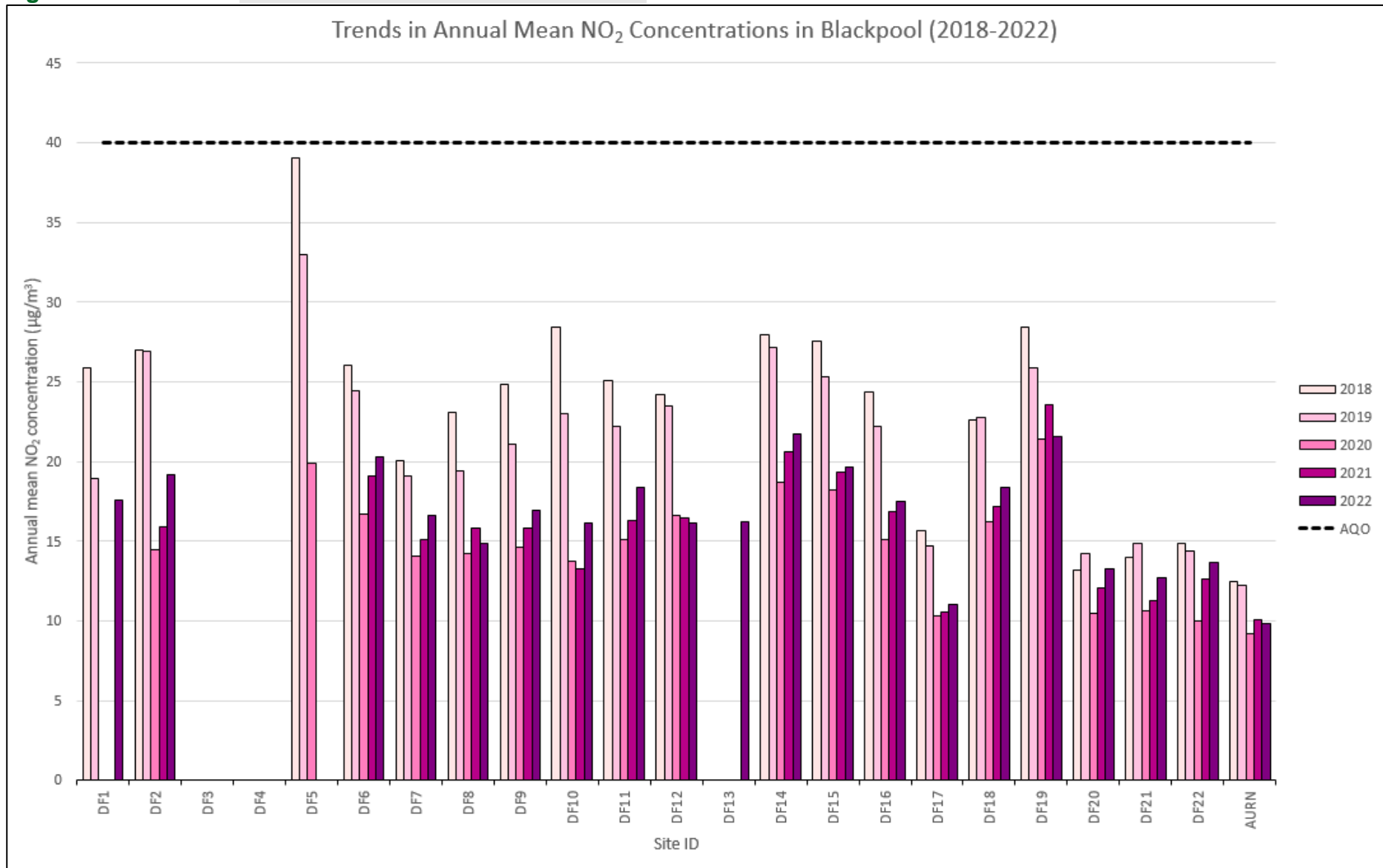


Figure A. 2 – Trends in Annual Mean NO₂ Concentrations in Blackpool Town Centre AQMA

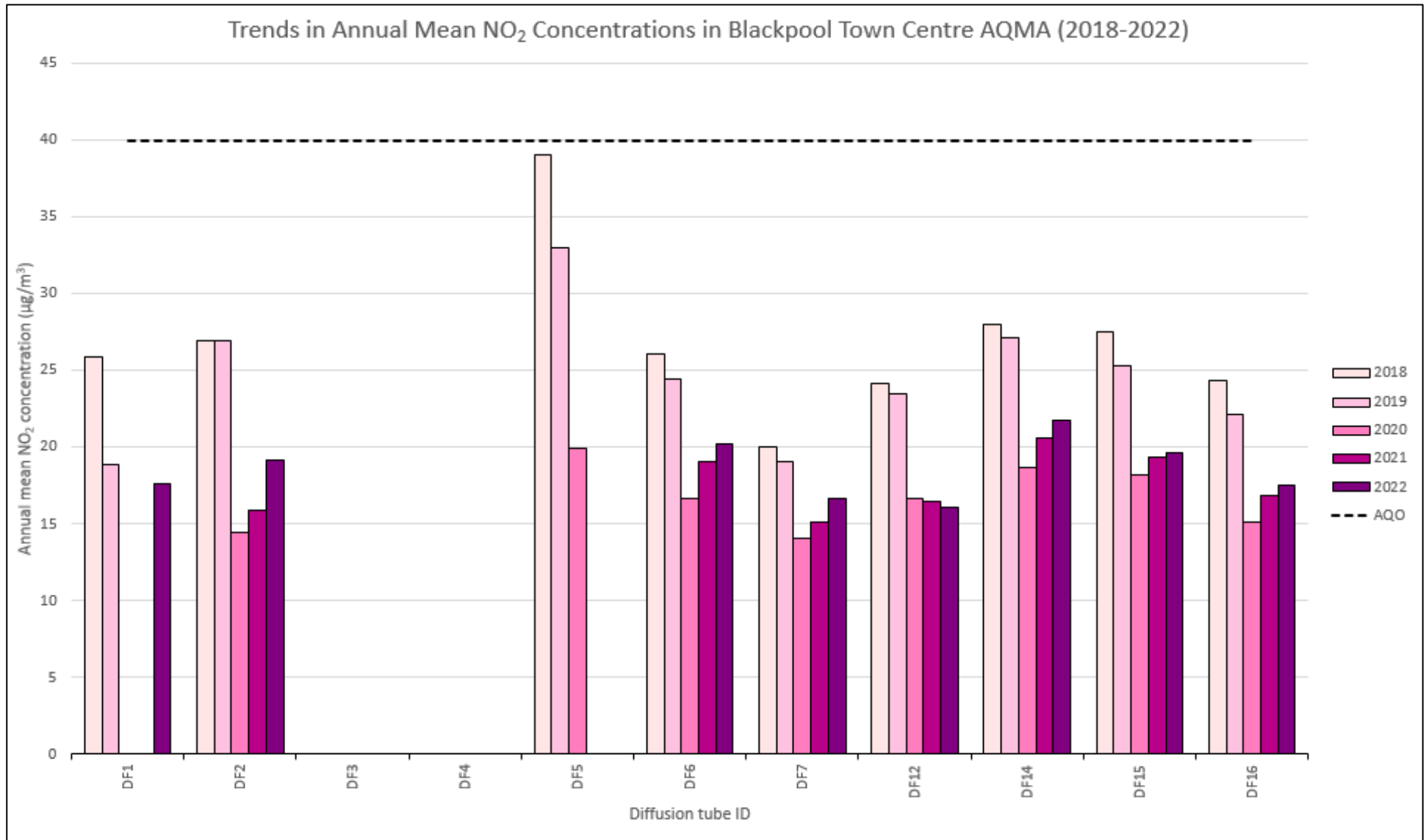


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
UKA00488	333768	434759	Urban Background	99	99	0	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ 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 PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture (%) ⁽²⁾	2018	2019	2020	2021	2022
UKA00488	333768	434759	Urban Background	99	99	-	13.4	14.8	12.2	13.6

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/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ 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%).

Figure A. 3 – Trends in Annual Mean PM₁₀ Concentrations in Blackpool

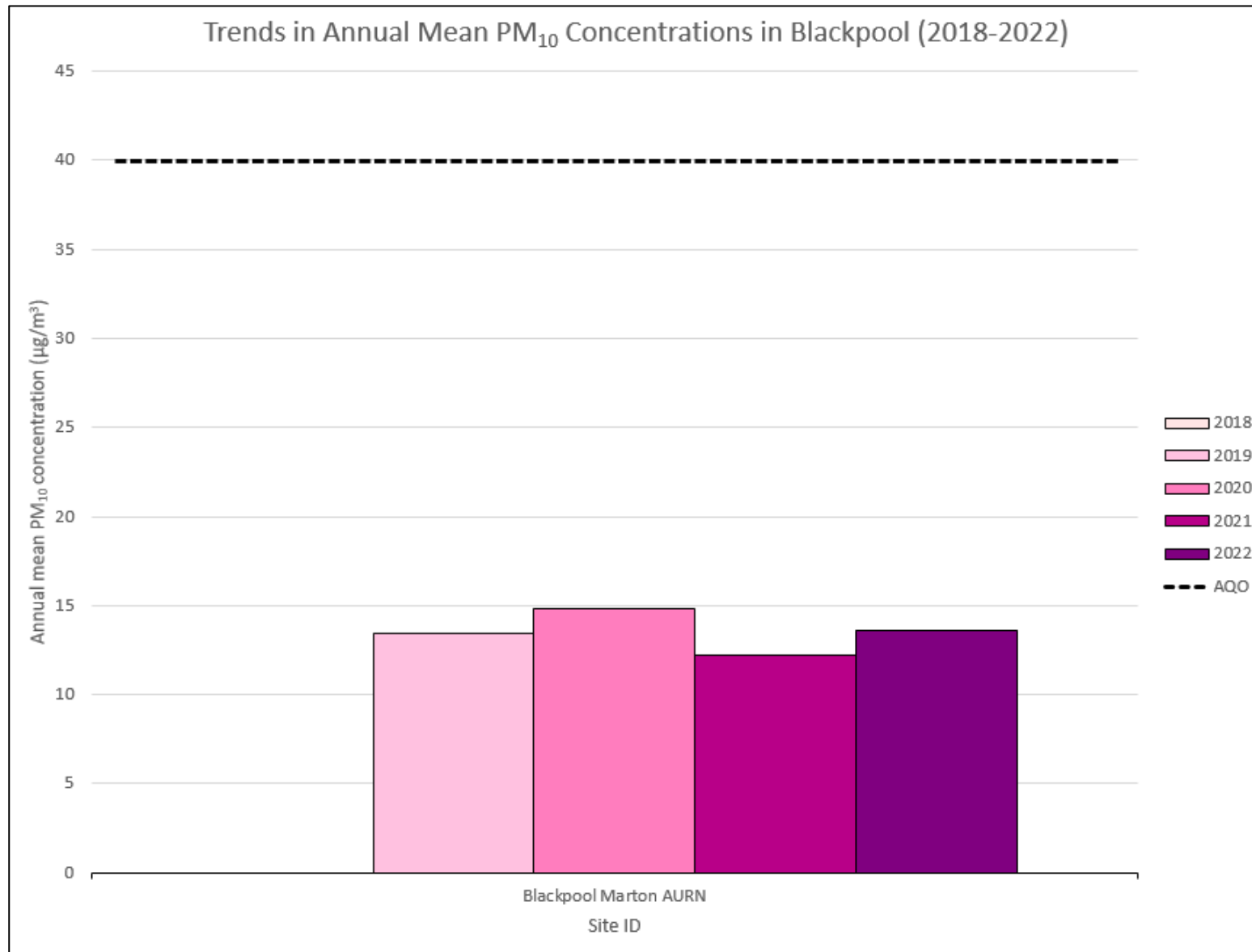


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
UKA00488	333768	434759	Urban Background	99	99	-	0	0	0	4

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Figure A. 4 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

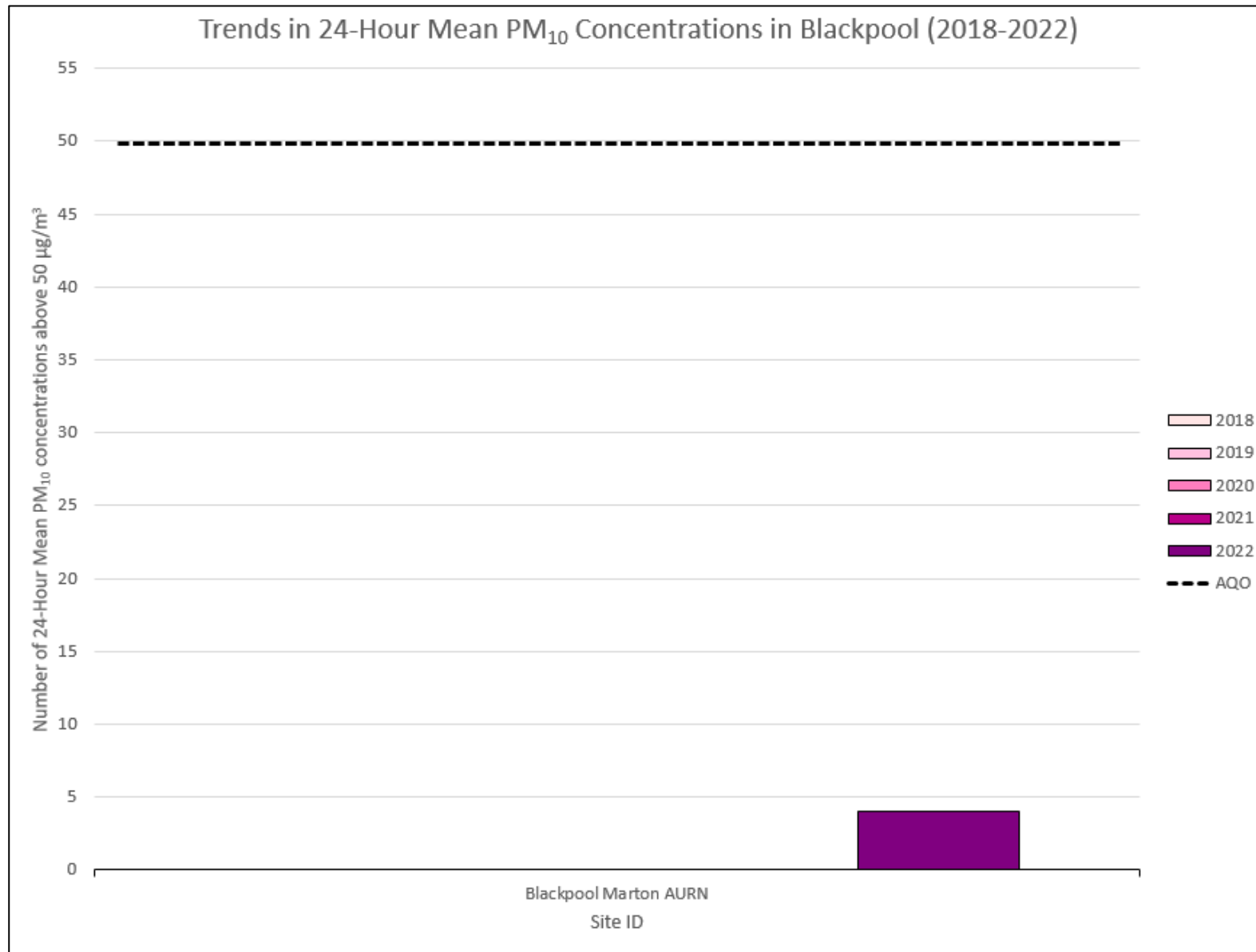


Table A.8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture (%) ⁽²⁾	2018	2019	2020	2021	2022
UKA00488	333768	434759	Urban Background	99	99	8.5	9.2	8.2	7.3	7.9

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

Notes:

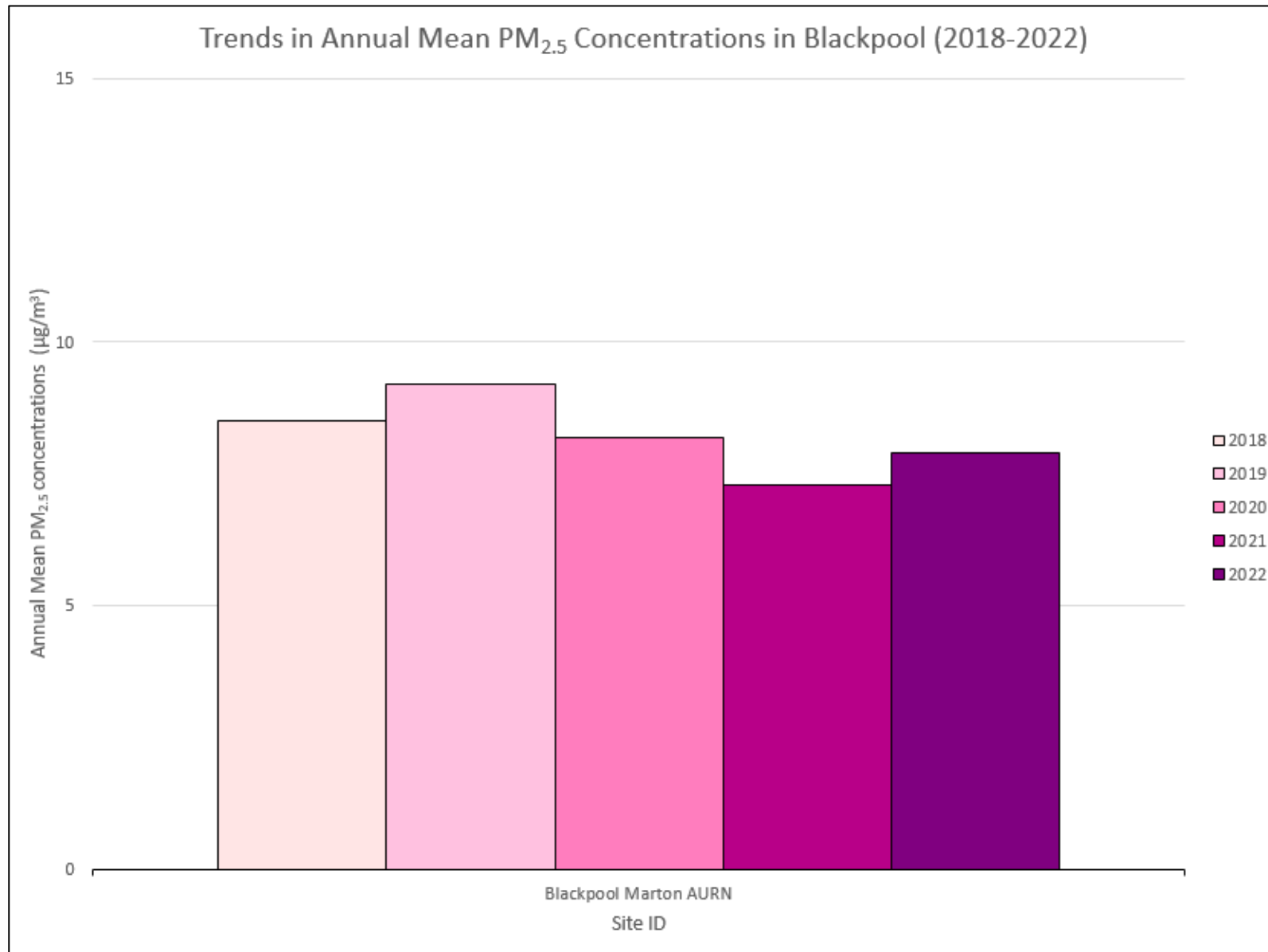
The annual mean concentrations are presented as µg/m³.

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%).

Figure A. 5 – Trends in Annual Mean PM_{2.5} Concentrations in Blackpool



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO₂ 2022 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 Raw Data Mean:	Annual Mean: Annualised and Bias Adjusted 0.83	Annual Distance Corrected Nearest Exposure	Mean: to	Comment
DF1	331007	436283	-	-	-	-	-	-	-	-	19.3	22.3	26.0	33.6	25.3	17.6	-		
DF2	330810	436432	28.9	21.6	30.3	21.3	-	10.4	14.8	20.1	19.5	28.0	25.4	34.1	23.1	19.2	-		
DF3	330755	436431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DF4	330872	436494	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DF5	330968	436550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DF6	330812	436688	29.9	24.9	30.2	19.1	-	16.1	18.7	21.5	21.8	23.9	28.5	33.9	24.4	20.3	-		
DF7	330700	436965	26.6	23.7	27.3	15.4	-	10.0	11.6	15.2	16.2	18.9	24.7	31.0	20.0	16.6	-		
DF8	330639	436703	21.5	20.3	-	-	-	-	-	-	17.4	18.0	22.8	31.1	21.8	14.9	-		
DF9	330647	436593	27.3	18.1	-	-	-	-	-	-	19.2	22.2	26.2	36.5	24.9	16.9	-		
DF10	330680	436584	25.8	22.5	26.6	18.1	-	10.9	12.6	17.1	16.0	16.2	20.2	28.2	19.5	16.1	-		
DF11	330630	436268	28.6	26.1	27.8	19.4	-	14.1	16.7	19.5	16.2	19.1	25.0	30.9	22.1	18.4	-		
DF12	330915	436693	25.8	27.6	25.6	15.8	-	10.3	11.8	15.4	15.5	17.5	20.8	27.7	19.4	16.1	-		
DF13	330879	436719	23.5	21.3	24.6	17.1	-	11.2	14.3	18.4	15.4	19.7	21.9	27.8	19.6	16.2	-		
DF14	331287	436342	33.2	31.8	29.5	21.5	-	18.7	21.4	22.0	20.7	25.2	29.2	34.7	26.2	21.7	-		
DF15	331300	436276	30.1	28.3	31.1	21.8	8.0	15.3	18.5	20.8	21.4	25.3	28.5	35.6	23.7	19.7	-		
DF16	331162	436355	28.1	21.2	29.7	19.9	13.8	10.7	13.1	19.9	18.8	19.6	24.6	33.9	21.1	17.5	-		
DF17	332890	436849	-	13.5	20.5	10.9	8.0	6.3	7.7	-	10.9	13.5	16.9	25.3	13.3	11.1	-		
DF18	331328	436963	31.6	22.6	29.5	18.6	-	12.0	14.2	17.4	17.4	21.7	25.5	32.6	22.1	18.3	-		
DF19	332482	434614	30.7	30.6	33.3	16.0	-	20.3	20.4	26.4	23.9	24.4	27.5	32.4	26.0	21.6	-		
DF20	333771	434764	23.9	23.0	19.8	10.1	19.4	7.1	8.9	9.9	10.4	16.5	20.1	22.6	16.0	13.3	-		
DF21	333767	434758	30.0	21.0	20.5	10.0	9.5	8.4	7.0	9.1	9.8	14.2	19.6	24.9	15.3	12.7	-		
DF22	333775	434758	23.9	29.6	25.9	11.8	-	7.1	7.5	9.0	9.4	14.6	18.5	23.6	16.4	13.6	-		

- 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.
- Blackpool Council confirm that all 2022 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 Blackpool Council During 2022

Blackpool Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Blackpool Council During 2022

Blackpool Council has not completed any additional air quality works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Blackpool Council's diffusion tubes are prepared and analysed by Gradko using the 20% TEA in water method.

The concentrations of nitrite ions and hence NO₂ chemically adsorbed are quantitatively determined by UV/ Visible Spectrophotometry with reference to a calibration curve derived from the analysis of standard nitrite solutions (UKAS Accredited Methods). Gradko takes part in several national quality schemes such as the QA/QC Field Intercomparison, operated on behalf of Defra, Air PT, and LEAP.¹⁸

Blackpool Council confirms that monitoring has been completed in adherence with the 2022 Diffusion Tube Monitoring Calendar.

¹⁸ Gradko International, Nitrogen Dioxide Diffusion Tubes,

<https://www.gradko.com/environmental/environmental-products/nitrogen-dioxide-diffusion-tubes.shtml>

Diffusion Tube Annualisation

Annualisation was required for three diffusion tube sites in Blackpool Council area as recorded data capture for the three sites was less than 75% but greater than 25% during 2022. These sites were DF1 (92 Topping Street), DF8 (Regent Court (Promenade)), and DF9 (Springfield (Promenade)).

Data from three AURN monitoring sites; Blackpool Marton, Preston, and Wigan Centre, was used to provide location specific diffusion tube average annualisation factors to apply to the raw data annual mean, giving an annualised annual mean for each location. Details on annualisation methodology is presented in Table C.1.

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Blackpool Marton	Annualisation Factor Preston	Annualisation Factor Wigan Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DF1	0.8392	0.8750	0.8008	0.8383	25.3	21.2
DF8	0.8233	0.8135	0.8206	0.8191	21.8	17.9
DF9	0.8233	0.8135	0.8206	0.8191	24.9	20.4

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.

Blackpool Council have applied a national bias adjustment factor of 0.83 to the 2022 monitoring data. A summary of bias adjustment factors used by Blackpool Council over the past five years is presented in Table C.2. Blackpool Council determined the appropriate national bias adjustment factor using Version 03/23 of the Defra published National Diffusion Tube Bias Adjustment Spreadsheet using 27 Gradko studies for the relevant diffusion tubes (20% TEA in water) for 2022.

Blackpool Council has chosen to use the national bias adjustment factor of 0.83 for 2022, rather than the local bias adjustment factor for 2022 (0.63). This is because the local co-location study occurred in an urban background, residential area outside of Blackpool Town

Centre, however, the majority of the diffusion tubes are located within the Town Centre. Therefore, the local bias adjustment factor would not be representative of the diffusion tubes in Blackpool Town Centre and the AQMA.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.83
2021	National	03/23	0.84
2020	National	03/23	0.81
2019	National	03/23	0.91
2018	National	03/23	0.92

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO₂ monitoring locations within Blackpool Council required distance correction during 2022.

QA/QC of Automatic Monitoring

Bureau Veritas operates the Blackpool Marton AURN who are responsible for routinely calibrating and servicing the equipment in order to ensure accurate data quality.

Live information on air quality captured by the AURN is available via the website. [Graph of hourly measurements for Blackpool Marton - Defra, UK](#)

PM₁₀ and PM_{2.5} Monitoring Adjustment

The PM₁₀/PM_{2.5} monitor(s) utilised within Blackpool Council do not require correction factors to be applied.

Automatic Monitoring Annualisation

All automatic monitoring locations Within Blackpool Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance. No automatic NO₂ monitoring locations within Blackpool Council required distance correction during 2022.

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

Figure D.1 - Map of Non-Automatic and Automatic Monitoring Sites

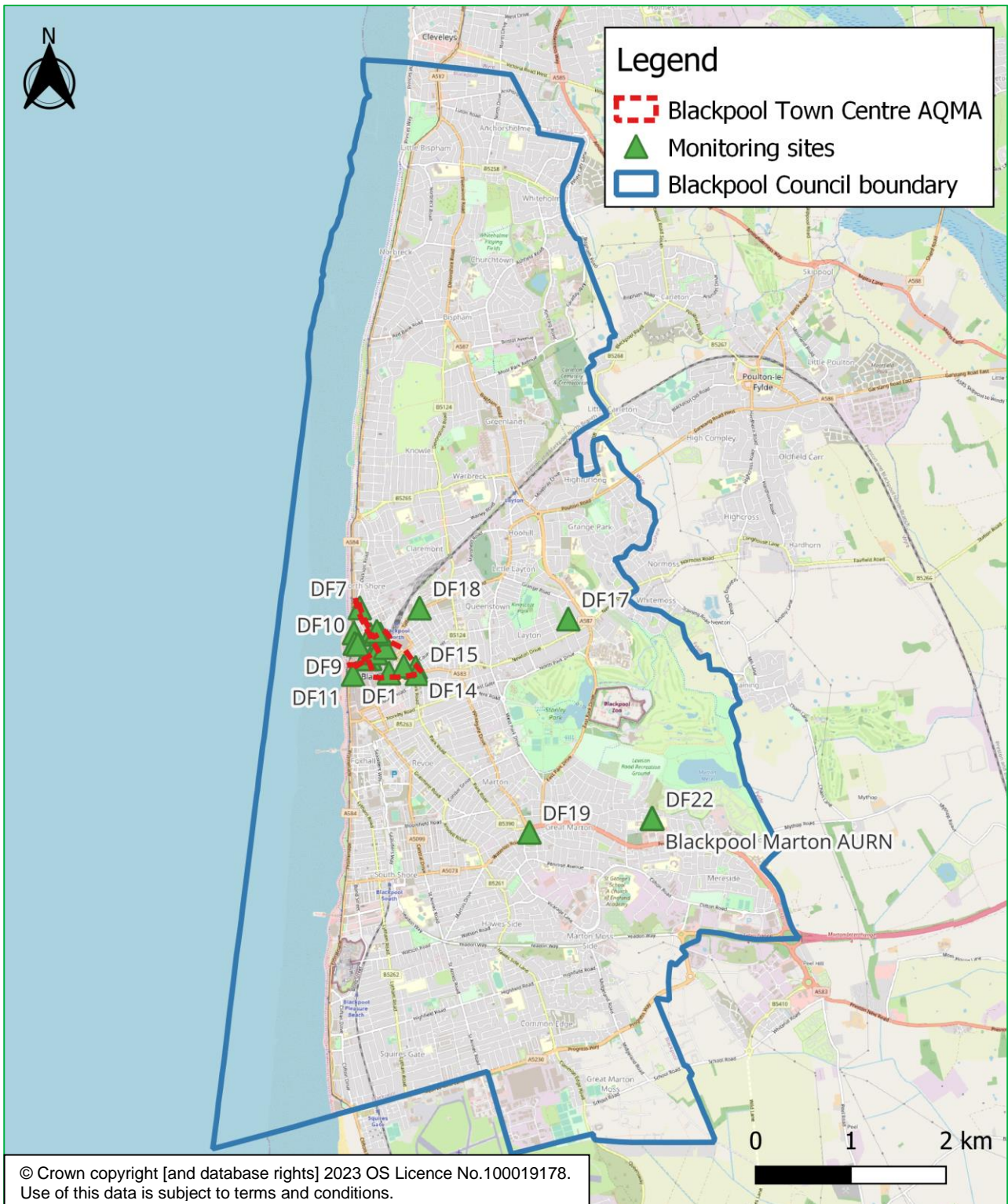


Figure D.2 - Map of Monitoring Sites in and surrounding Blackpool Town Centre AQMA



Figure D.3 - Map of DF17 (29 Lakeway) monitoring site

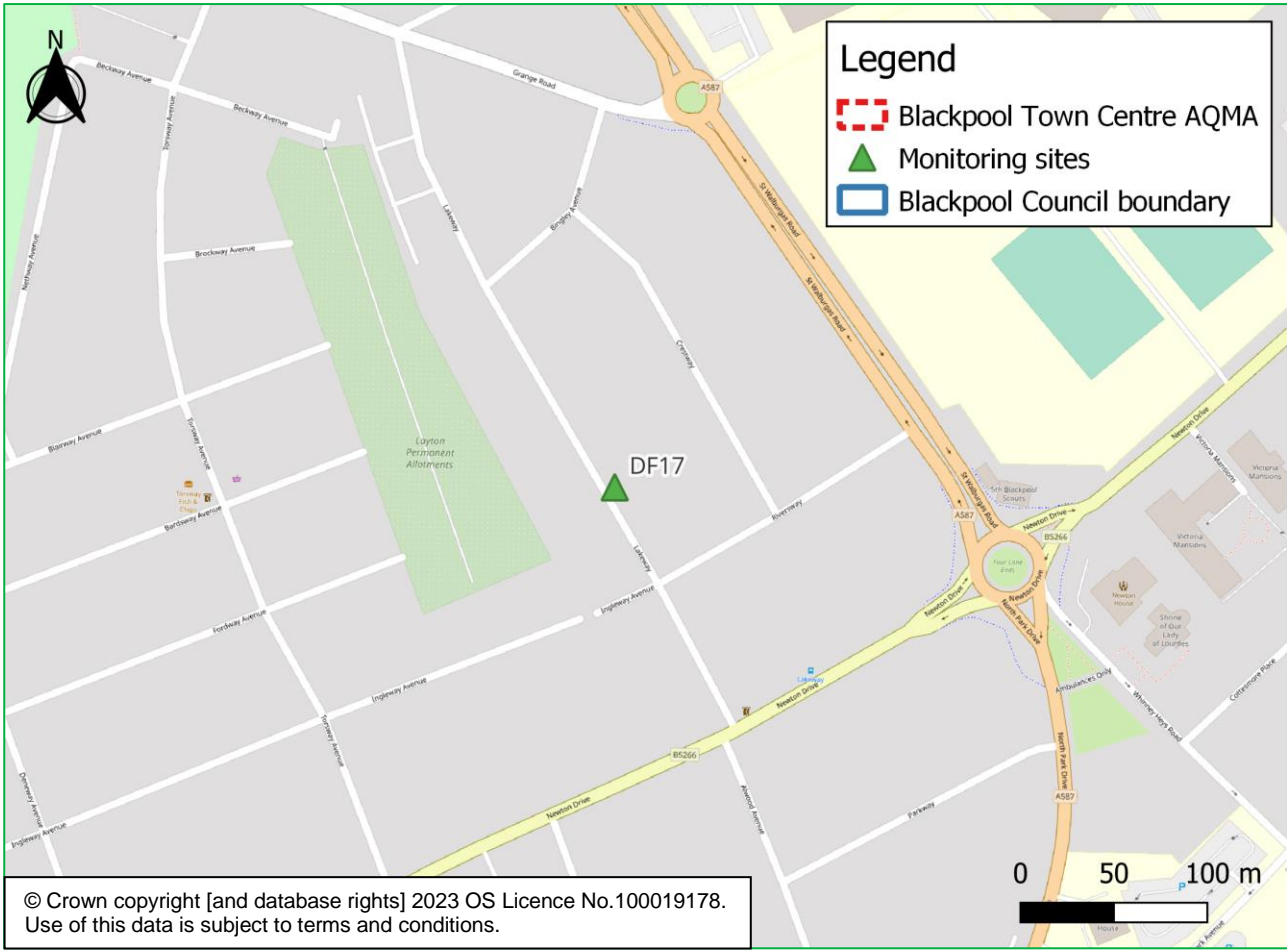


Figure D.4 - Map of DF20, DF21, DF22 non-automatic monitoring sites and Blackpool Marton AURN

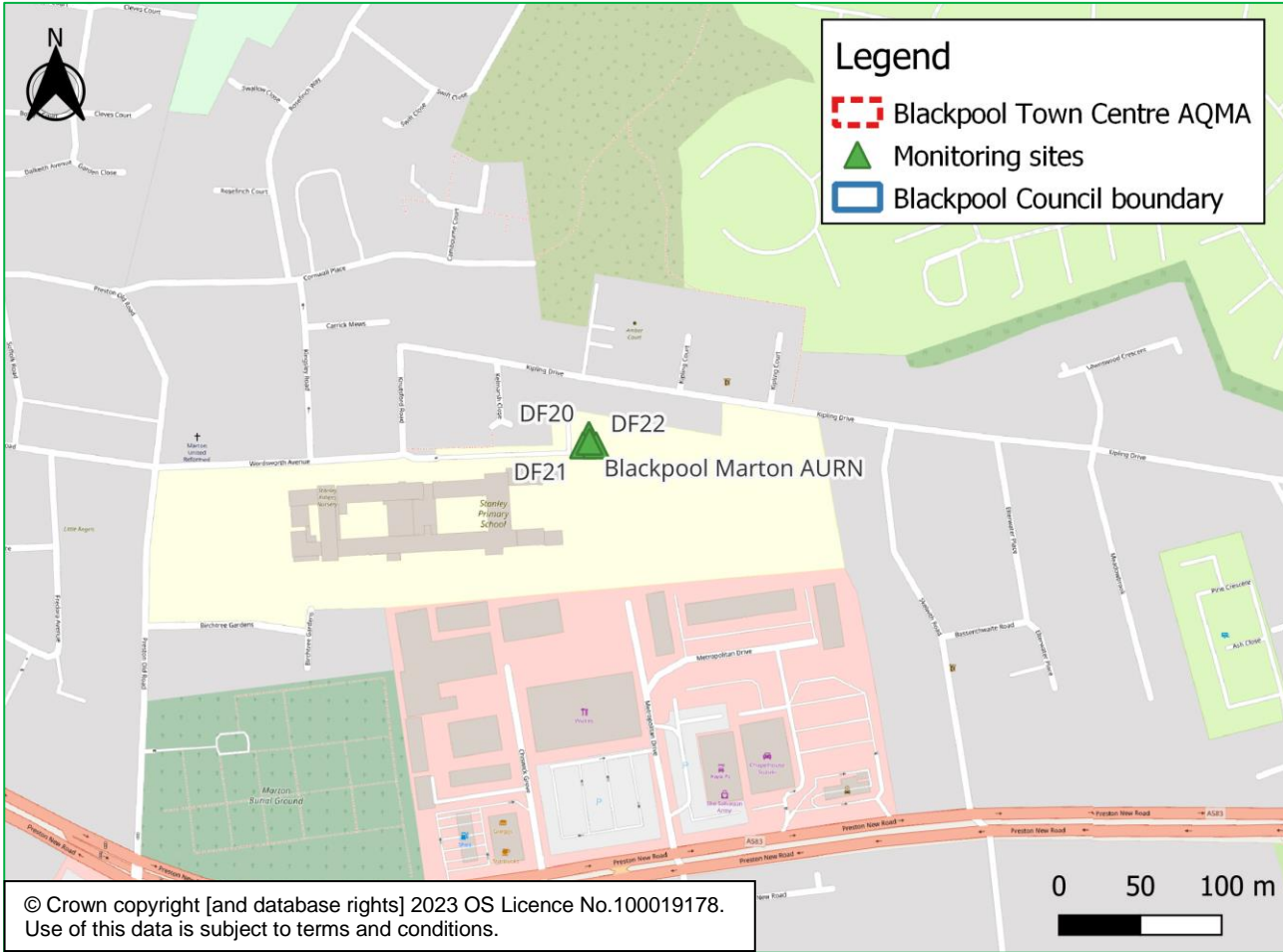
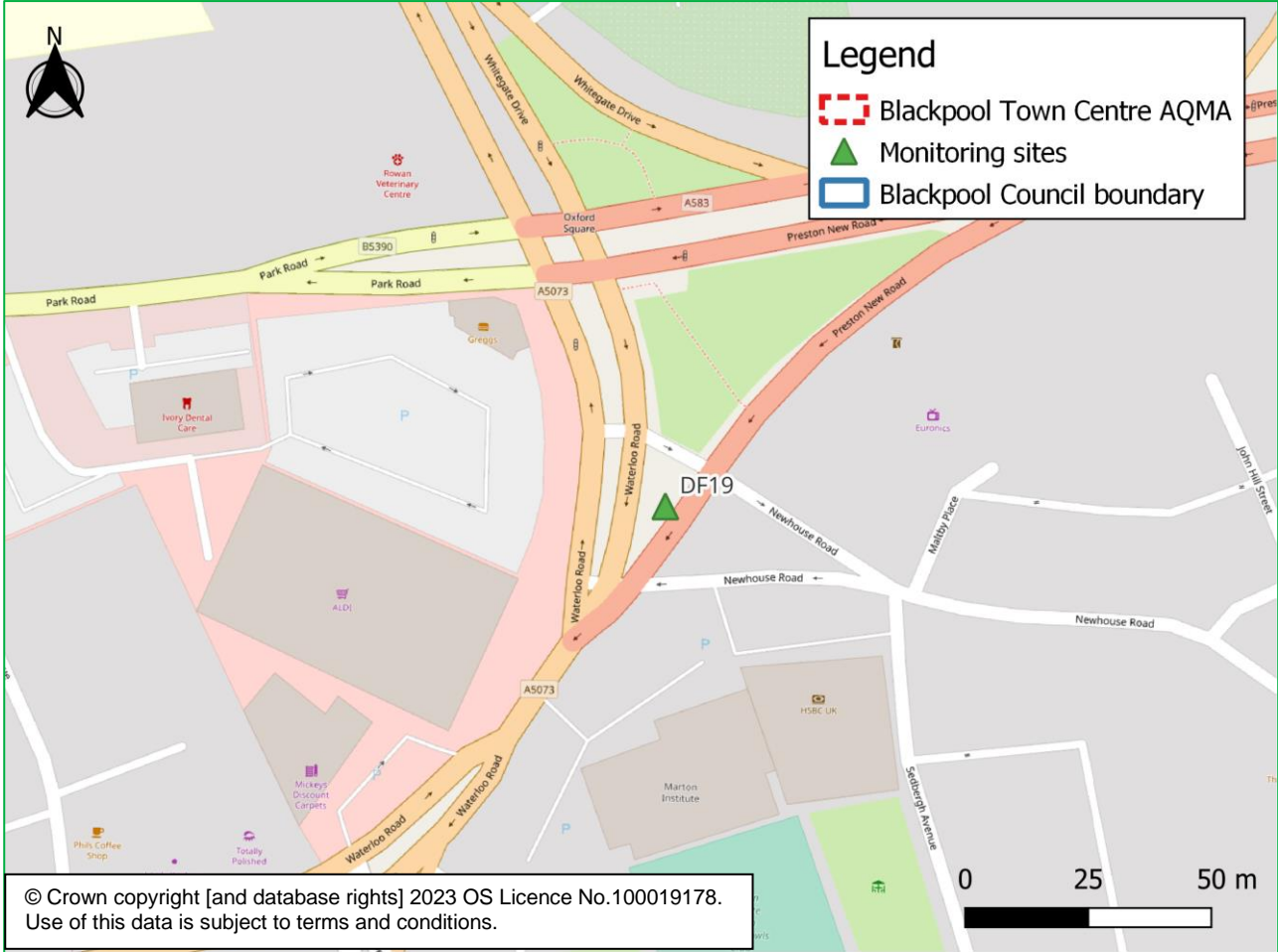


Figure D.5 - Map of DF19 (Oxford Square) monitoring site



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England¹⁹

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

¹⁹ The units are in micrograms of pollutant per cubic metre of air (µg/m³).

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 10 µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5 µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

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