City of BRADFORD METROPOLITAN DISTRICT COUNCIL

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: June, 2024

Information	City of Bradford MDC
Local Authority Officer	Elizabeth Bates / Kane Armatage
Department	Sustainability
Address	1st Floor, Britannia House, Hall Ings, BD1 1HX
Telephone	01274 435533
E-mail	elizabeth.bates@bradford.gov.uk / kane.armatage@bradford.gov.uk
Report Reference Number	2024 ASR / CBMDC
Date	June 2024

Executive Summary: Air Quality in Our Area

Air Quality in City of Bradford MDC

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[1].

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution[2].

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.

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

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

Bradford has areas of high levels of deprivation and significant levels of health inequality. 27% of the Bradford district population live in areas classed as the 10% most deprived in England. There are above average numbers of deaths from smoking, cancer, heart disease and strokes and it is estimated that emissions of man-made fine particles, PM2.5 cause 5.5[3]% of total mortality. There are marked differences in people's health within the Bradford district with people living in Wharfedale (to the north) typically living five years longer than people living in Tong (to the south). In Bradford there are more deaths resulting from smoking, cancer, heart disease, and strokes, and higher rates of mortality in children, than in most parts of the UK

Poor air quality is closely linked to poor health and is frequently identified in the most deprived wards of the city. City of Bradford MDC fully recognises that improving local air quality is essential to deliver better health outcomes for all. This is particularly important for the above national average numbers of young people in the district (22.8% of the total population are under 16) who are particularly sensitive to the effects of poor air quality. They may experience life-long impacts resulting from pollutant exposure in their early years.

The main air pollutants of concern in Bradford are nitrogen dioxide (NO_2) and particulate matter (PM). A significant source of these pollutants is traffic but industry, heat and power generation, domestic sources, agriculture, and natural activities also contribute.

At present Bradford has four declared Air Quality Management Areas

- AQMA order 1 – Mayo Avenue
- AQMA order 2 – Manningham Lane / Queen's Road
- AQMA order 3 – Thornton Road
- AQMA order 4 – Shipley Airedale Road

Maps showing the locations of the AQMAs are available in Appendix D of this report or can be viewed on the council's website here:

Link to AQMA location maps on CBMDC website

Air pollution in Bradford is improving. 2023 saw some of the lowest air pollution levels monitored at real time monitoring sites in the district since records began. Everyone in the

[3] Fingertips Public Health data (2022) – Office for Health Improvement and Disparities

district will benefit from cleaner air. As the health risks associated with air pollution decline so should the pressure on the NHS to deal with respiratory and cardiovascular illnesses.

A Government mandated Class C+ Clean Air Zone (CAZ) was introduced into Bradford in September 2022. The zone requires buses, HGVs, LGVs, coaches, hackney carriages, and private hire vehicles to meet minimum emission standards. Private cars are not affected. Vehicles entering the CAZ that don't meet the required emission standards are required to pay a daily entry fee.

The Bradford CAZ covers the area inside, and including, the Bradford outer ring road and extends out along the Aire valley corridor, (Manningham Lane/Bradford Road and Canal Road area) to include Shipley and Saltaire.

The image below shows the extent of the Bradford Clean Air Zone. A full-sized map of the CAZ can be viewed here: **Link to interactive CAZ map on CBMDC website**.

Figure 1: Extent of the Bradford Clean Air Zone

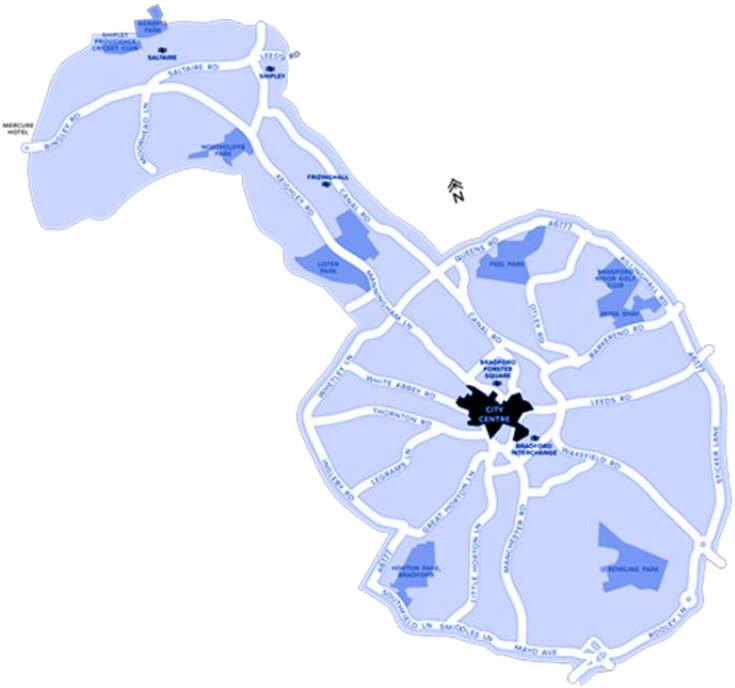
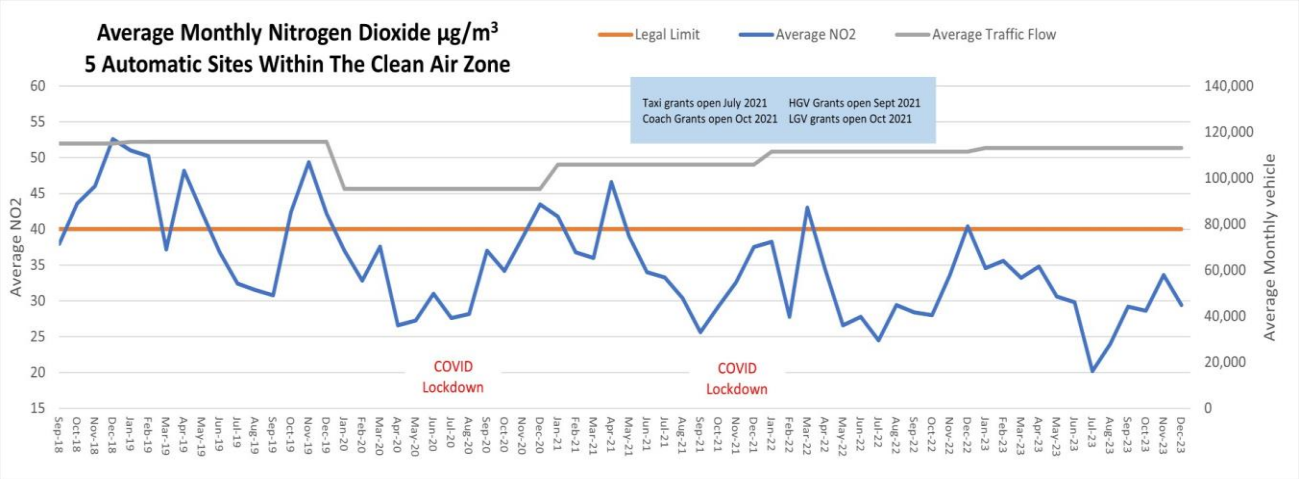


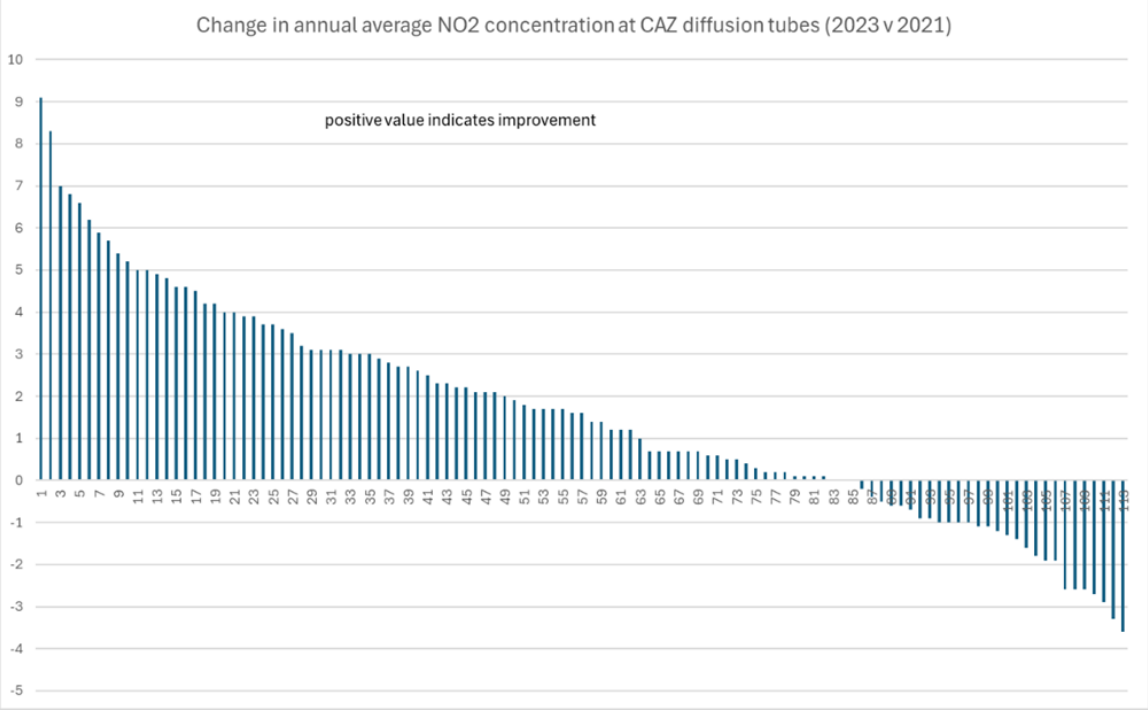
Figure 2 shows monthly data from automatic monitoring sites in the Bradford Clean Air Zone. The automatic monitoring stations are the most accurate type of equipment used to monitor air quality in Bradford. During 2023 some of the lowest levels of NO_2 were recorded since records began in Bradford, despite traffic returning to pre-Covid 19 pandemic levels.

Figure 2: Monthly average NO_2 concentration at Bradford real time monitoring sites in the CAZ pre and post CAZ



Between 2021 and 2023 approximately 75% of the diffusion tubes located in the CAZ showed an improvement in air quality. Diffusion tubes are low-cost sensors used to provide spatial information about air quality across the Bradford district. Variations in annual average nitrogen dioxide concentrations of around 1-2µg/m^3 are considered normal due to the indicative nature of the diffusion tube monitoring technique and changes in weather. Changes above 2µg/m^3 are considered more significant.

Figure 3: Change in concentration at diffusion tubes within the Bradford CAZ between 2021 and 2023



During 2023 there were only 2 monitored locations where the annual average nitrogen dioxide air quality objective of 40µg/m^3 was exceeded:

- DT12 – Shipley Airedale Road (AQMA order 4)
- DT72 - Queen's Road (AQMA order 2)

A third site at DT191 Low Mill, Keighley also exceeded 40µg/m^3. There are no relevant receptor points at this location. Due to the lack of a relevant receptor point this is not an exceedance of the national air quality objective and no AQMA needs to be declared. It is however an exceedance of the air quality limit value and has been highlighted by JAQU as a location requiring further investigation in the state 1 assessment of the CAZ.[4]

In the Mayo Avenue AQMA (order 1) site DT105 remains close to exceeding the annual average air quality standard for NO_2 but when corrected for distance to the nearest relevant receptor point the air quality objective level is met. In the first state 1 assessment of the Bradford CAZ, JAQU identified this site as requiring further investigation. The Mayo Avenue (AQMA – order 1) will be retained until this location passes the JAQU state assessment. Air quality at site DT105 improved towards the end of 2023 and is currently considered by CBMDC to be compliant with both the national air quality objective and the air quality standard.

The AQMA at Thornton Road has complied with the air quality objectives since 2018 and could now be revoked. However, this area is currently undergoing a period of significant change with pipes being laid to serve the new energy centre and changes expected to traffic movements in the area due to pedestrianisation of some city centre roads. A new stretch of cycle lane is also being introduced.

It would be inappropriate to revoke the Thornton Road AQMA under the current congested conditions which could temporarily increase pollutant concentrations and where 'normal' traffic conditions will have changed once the works are complete. Air quality conditions in the area will be reassessed once the works are complete and traffic levels have returned

[4] Local authorities are required to review and assess air quality against the national air quality objectives which apply at locations where there are relevant receptors points. These are locations where there is regularly human exposure over the averaging time of the objective levels. For the annual average NO_2 objective this includes places where people live or are exposed long term whilst receiving health care or education. JAQU are required to assess air quality (and the success of the CAZ) against the Air Quality Limit values / standards. These are absolute limits not to be exceeded at locations where exposure can arise even for short periods. Site DT191 has a footpath running past it where people are present for short periods. It is therefore considered to be in breach of the air quality limit value but not the air quality objective.

to the new ‘normal’. If no new exceedances of air quality objectives are identified the AQMA will be revoked.

Elevated pollutant levels have previously been identified in other areas of the district. These include:

- Harrogate Road / Killinghall Road
- Saltaire crossroads
- Rooley Lane
- Tong Street
- Canal Road

Air quality in these areas is also generally improving (see trends graphs in Appendix A). There were no exceedances of the annual average nitrogen dioxide objective (NO_2) at relevant locations in any of these areas during 2023.

Monitoring undertaken in Ilkley, Silsden and Apperley Bridge during 2023 did not identified any exceedance of air quality objectives.

During 2021 many additional passive nitrogen dioxide (NO_2) diffusion tube monitoring locations were established around the district to assist with evaluation of the CAZ. This additional monitoring highlighted further areas of elevated pollutant concentrations around the city centre (Godwin Street, Market Street and Sunbridge Road) and along Manchester Road. During 2023 there were no exceedances of the annual average objective at any of these locations and air quality on Market Street continued to show significant improvement.

Remaining challenges

Whilst air quality is generally improving across the Bradford district there are four locations identified as requiring further air quality improvement. These are located on Manchester Road, Queen’s Road, Shipley Airedale Road and the A6035 at Keighley. City of Bradford MDC is currently working with the Government’s Joint Air Quality Unit (JAQU) to investigate the remaining exceedance of air quality standards at these locations.

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[5] 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 of most harmful to human health. The Air Quality Strategy[6] 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[7] 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.

Since the Ministerial Direction to implement the CAZ City of Bradford MDC has distributed £22m in government grants to residents and businesses to help upgrade their vehicles. CAZ exemptions have been issued to over 10,000 locally registered vehicles.

Compliant vans entering the CAZ have increased from 50 percent to 70 percent while larger vehicles like articulated lorries have increased from around 80 percent to 97 percent.

The Bradford taxi fleet is already 99.9 percent compliant, mainly comprised of hybrid electric vehicles. It is the cleanest fleet in the country. It is set to become even cleaner with 195 fully electric, zero emission vehicles now on the licensed fleet and a further 443 applications for fully electric vehicles recently allocated funds.

Bus operators have 317 newly compliant buses, with £10m ZEBRA funding for new additional electric buses secured.

---

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

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

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

Per month only 1.3 percent of approximately 5 million journeys into the CAZ are non-compliant vehicles. Most of the vehicles charged in the zone are coming from outside the Bradford District.

Grants are still available to Bradford businesses and residents who wish to upgrade non-compliant vehicles along with specific grants to assist taxi drivers to switch to electric vehicles. Link to Information on Bradford CAZ grants on CBMDC website

City of Bradford MDC is using revenue income from the CAZ on projects to further improve air quality in the district. The first major project is the Clean Air Schools Programme (CASP) launched in autumn 2023. This is providing approximately £500,000 of grants to schools to help reduce emissions and exposure to poor air quality in and around their grounds. Individual schools can apply for up to £10,000 each. Link to information on Clean Air Schools Programme on CBMDC website.

Additional support is also being provided to schools to help tackle idling emissions and to improve awareness of air quality issues within their school communities. City of Bradford MDC also continues to deliver school street programmes, play streets and other active travel measures.

Figure 4: Bradford anti-idling campaign

Figure 5: Bradford Clean Air Schools Programme

Recently a £25,000 CAZ revenue grant has been provided to support a fully electric HGV trial at Joseph Parrs Bradford. They will be operating the first zero-tailpipe flatbed HGV with a crane lift at a builders' merchant in the UK on a one-year trial basis.

Figure 6: Bradford Electric HGV trial

There are many other projects currently taking place in the district that will result in longer term air quality improvements.

These include:

- **Bradford Low Carbon Hydrogen** - a partnership project between Hygen and N-GEN (developed by Renewable Connections) to build a groundbreaking hydrogen production facility at the old Birkshall gas storage site on Bowling Back Lane in Bradford. Once built the facility will produce enough hydrogen to fuel up to 800 buses a day. Link to project information on Hygen website
- **Bradford Energy Network** – Development of an air source heat pump-based energy centre has recently been approved on Thornton Road in Bradford. The energy centre has the potential to replace a significant number of old gas and biomass fired boiler plants in large buildings across the city centre through creation of a district heat network scheme. Work to lay pipes to serve the energy centre has already commenced. Link to Bradford energy information website
- **Biomethane Project** - The council is currently investigating opportunities for anaerobic digestion of food / green waste to produce methane to fuel the district's refuse trucks. City of Bradford MDC has received £3,660,690 in Government funding to support food waste collection services which become mandatory in 2026.
- **Transforming Cities Fund (TCF) -** At a regional level City of Bradford MDC is involved with delivery of numerous Transforming Cities Fund (TCF) projects managed by WYCA. These include bus, cycle, and pedestrian improvements in Bradford city centre, improving walking access to the Bradford Interchange Rail station and providing a new Park and Ride project on the Manchester Road corridor. Other regional projects include extension of the Leeds / Bradford cycle superhighway on Thornton Road and highway improvement measures on the Shipley / Airedale corridor and in West Bradford. Options for a regional mass transit system are also being explored.
- **West Yorkshire LEVI project –** WYCA has received LEVI funding to enhance the number of publicly accessible charge points across the region specifically targeting 'close to home' charging for residents without access to off street parking. There are currently 832 publicly available electric vehicle charging devices in West Yorkshire. Government figures predict over 10,000 may be needed by 2030 to meet demand. CBMDC will help to facilitate the use of LEVI funding within the Bradford district.

Traffic is not the only source of air pollution in Bradford. Other activities such as domestic solid fuel burning, agricultural emissions and industrial emissions also impact on local air quality.

During 2023 City of Bradford MDC established a new network of 12 'Zephyr' real-time low-cost air pollution sensors in residential areas across Bradford and worked with local universities to investigate the impacts of indoor air pollution. A domestic solid fuel awareness campaign aimed at raising awareness about emissions from domestic solid fuel burning and associated legislation was launched in winter 2023. These activities were funded by a Defra funded Air Quality Grant.

Figure 7: City of Bradford MDC solid fuel burning campaign (winter 2023/4)

City of Bradford MDC is currently working with other West Yorkshire authorities to improve regional quantification of emissions associated with domestic, commercial, and industrial activities. We are working towards the development of a Particle Reduction Strategy (PRS) for the Bradford District and supporting the updating of the West Yorkshire Low Emission Strategy (WYLES).

Conclusions and Priorities

During 2023 air quality continued to improve across the Bradford District. Only two monitored locations exceeded the annual average nitrogen dioxide air quality objective in 2023 (DT72 - AQMA order 2 and DT12 – AQMA order 4). 75% of CAZ diffusion tube monitoring sites showed an improvement (between 2021 and 2023). Real time monitoring sites within the CAZ recorded the lowest levels since monitoring began.

The annual average air quality objective has been met in AQMAs 1 and 3 for the past 5 years, but revocation has been delayed due to JAQU concerns regarding compliance of

site DT105 (AQMA order 1) with the air quality limit value, and the unknown impact of ongoing changes to the road network in the Thornton Road AQMA (order 4).

All other areas of previous air quality concern were well within the national air quality objectives during 2023 and continue to show downward trends.

Bradford continues to make good progress with action planning measures and is reinvesting revenue from the CAZ into new air quality improvement projects. During 2023 the Clean Air Schools Programme was successfully launched with £500,000 reinvested into schools to help them reduce pollution and exposure at their sites. An additional £25K has been provided for an electric HGV trial. CAZ grants continue to be given to upgrade the taxi fleet further to electric and to help residents meet the CAZ standards. Other projects such as the Particle Reduction Strategy and the school streets interventions continue to make good progress.

Over the next year Bradford will be focusing on the following areas:

- Continued evaluation of the Bradford CAZ – ongoing monitoring and evaluation by the council and by independent assessors working on behalf of JAQU
- Completion of round one of the CASP grant scheme – all grant allocation will be completed during 2024 with some project delivery within schools likely to continue into 2025.
- Further development and delivery of anti-idling measures at schools.
- Commencing delivery of air quality education sessions for schools.
- Delivery of Clean Air Day 2024 event for schools
- Launch and evaluation of the HGV electric vehicle trial.
- Supporting development and implementation of the hydrogen test bed facility.
- Supporting local implementation of the district heat network scheme and energy centre.
- Investigating opportunities for anaerobic digestion of food waste and production of methane to power refuse trucks
- Introduction of electric bike and tuk-tuk scheme
- Introduction of electric vehicle salary sacrifice scheme for City of Bradford MDC staff
- Further development of the Bradford particulate reduction strategy and West Yorkshire particulate monitoring project and dashboard

- Continued delivery and evaluation of school streets, play streets and other active travel measures
- Supporting WYCA with continued planning and delivery of the TCF programme and feasibility into a mass transit system for the region
- Delivery of Low Emission Vehicle Infrastructure (LEVI) funded projects in Bradford.
- Continued dissemination of information on air quality information, improvement measures and outcomes to the public
- Continued review of planning applications and requirements for air quality mitigation measures – including the updating of local air quality planning guidance

Local Engagement and How to get Involved

How can you help?

You can help improve air quality in Bradford by:

- If able, reducing your vehicle use by walking and cycling for shorter journeys. Try and pick routes which are not as heavily trafficked (e.g. through parks and lesser used streets) to reduce the amount of pollution exposure.
- Make the most of public transport as an alternative to using a car, this can save money and reduce impact on the environment. Check out information on local transport provision to help plan journeys - Link to public transport information on CBMDC website
- If you have children who are travelling to school, consider the advice on the council website to help make this journey more sustainable and improve their health - Link to sustainable school travel advice on CBMDC website
- If you own a vehicle which is regularly driven in urban areas, think about the impact on the environment when the time comes to replace it. Consider low emission alternatives, such as hybrids and electric vehicles. Although the initial purchase price may seem high in the longer term, they may prove more cost effective through reduced fuel and tax costs. Grants are available to help with the purchase of some low emission vehicles. More information is available here:

  Link to UK Government information on EV vehicle grants

  Link to Bradford CAZ grants scheme

If you need to own a vehicle and cannot replace it just yet you can still reduce your impact on the environment by following these ECO-driving tips:

- **Switch off your engine when parked**, especially outside schools and homes where children and residents are present. Idling your vehicle is an offence for which a fixed penalty notices of £20 can be served.
- **Check your tyres -** Under-inflated tyres mean an engine must work harder and will produce more emissions.
- **Clear the clutter -** remove unnecessary clutter from your boot and reduce engine workload.
- **Stick to the speed limit -** high speeds produce more emissions. At 70mph a driver could be using up to 15 per cent more fuel than at 50mph.
- **Slow down as you approach traffic jams** - Stop-start traffic jams use more fuel. Slow down early and take your foot off the accelerator. Use the stop start technology on your vehicle if it has it.
- **Close windows and cut down on the use of air conditioning** to reduce emissions
- **Share your journeys** - consider using the West Yorkshire car share scheme to help with this.

If you have a solid fuel appliance, such as a wood burning stove, ensure you use it correctly with approved dry fuels to minimise smoke emissions. If you live in a Smoke Control Area (SCA) you must comply with the legal requirements for smokeless zones. Residents are advised that if they fail to comply, they could risk a fine of up to £1,000 per offence.

You can find out where Bradford's smoke control areas are here Link to Smoke Control area map on CBMDC website

More information on smoke control rules can be found here:

Link to smoke control rules on UK Government website

Even if you don't live in a SCA you must avoid creating a smoke nuisance.

Link to smoke nuisance information on UK Government website

For your domestic heating, especially if you live in an urban area, consider buying a zero-emission air or ground source heat pump next time your boiler needs replacing.

If you would like to see more done to improve air quality in your area, then you could contact the local Councillor or MP and tell them about your concerns or ideas. To find out who your local Councillor or MP is and how to contact them;

Link to local democracy information on CBMDC website

Link to UK Parliament website

For more information on national campaigns to improve air quality visit;

Link to Global Action Plan Clean Air Day website

Link to Client Earth website

Link to Friends of the Earth website

Daily national air quality updates, pollution forecasts and advice about how to protect yourself from the impacts of poor air quality can be found at:

Link to UK Air website operated by Defra

Consultations on regional West Yorkshire projects to improve access and transport are available on the West Yorkshire Combined Authority website West Yorkshire Combined Authority Project consultations.

Consultations on schemes undertaken by City of Bradford MDC are available on the council website here CBMDC public consultation webpage

Lots more information about the CAZ, air quality in Bradford and help and advice on how to improve air quality can be found on the Breathe Better Bradford website.

Local Responsibilities and Commitment

This ASR was prepared by the Sustainability team of City of Bradford Metropolitan District Council with the support and agreement of the following officers and departments:

- Planning, Transportation & Highways
- Health and Well Being

This ASR has been approved by:

Andrew Whittles, Assistant Director, Sustainability, Department of Place

e-signature 

……

This ASR has not been signed off by a Director of Public Health as responsibility for air quality management sits with the Assistant Director of Sustainability who regularly briefs the DPH and Members on all air quality matters.

If you have any comments on this ASR please send them to Elizabeth Bates / Kane Armatage report authors at:

Sustainability
Department of Place
1st Floor, Britannia House,
Hall Ings,
BD1 1HX
Tel: 01274 435533 (CAP helpline)

elizabeth.bates@bradford.gov.uk or kane.armatage@bradford.gov.uk

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in City of Bradford MDC 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 City of Bradford 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 City of Bradford MDC can be found in Table 2.1. The table presents a description of the 4 AQMAs that are currently designated within City of Bradford MDC. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean*

** All the AQMAs in Bradford were originally declared for both the annual and hourly NO_2 objectives but only the annual average objective is now at risk of being exceeded*

The main purpose of an ASR report is to provide an update on compliance with the national air quality objectives within designated AQMAs and an update on all air quality improvement measures taking place within a district.

Air quality in all Bradford's AQMAs is improving. During 2023 there were only 2 exceedances of the annual average NO_2 objective at relevant locations within AQMAs. These were at site DT72 Manningham Lane (AQMA order 2) and site DT12 Shipley Airedale Road (AQMA order 4). The last recorded exceedances of air quality objectives at relevant receptor points in the Thornton Road AQMA (order 3) and Mayo Avenue AQMA (order 1) occurred in 2018.

A third site at DT191 (Low Mill, Keighley) also exceeded 40µg/m^3 during 2023 but there are no relevant receptor points at this location, and it is not required to be included in an AQMA.

Site DT105 (AQMA order 1) remains very close to exceeding the annual average air quality standard for NO_2 but when corrected for distance to the nearest relevant receptor

point the air quality objective level is met. This site is currently being investigated via state 1 assessment[8] of the Bradford CAZ carried out by JAQU during 2023.

CBMDC intends to retain the AQMA at Mayo Avenue until all monitoring sites in the AQMA pass the CAZ state assessment. Revoking an AQMA in an area recently identified by JAQU as potentially requiring further air quality improvement measures would cause confusion at a local level and could jeopardise support and funding for further improvement measures.

Air quality at site DT105 improved towards the end of 2023 and the site is currently considered by CBMDC to be complaint with both the national air quality objective and the air quality standard. The measured annual average concentration at the monitoring site for the full 2023 period was 39.4ug/m^3). The next state assessment is due in 2025.

The AQMA at Thornton Road has complied with the air quality objectives since 2018 and would normally now be revoked. However, this area is currently undergoing a period of significant change. Pipes are being laid to serve the new energy centre site and traffic is severely congested due to ongoing works to pedestrianise and alter access to city centre roads. A new stretch of cycle lane is also being introduced. It is expected that pollutant concentrations recorded during 2024 will be higher than those seen in recent years. Once the works have been completed a short period of post scheme monitoring will be undertaken to check that the area remains in compliance under the revised road layout / traffic conditions. The Thornton Road AQMA will be revoked as soon as possible afterwards. The council considers it would be inappropriate to revoke the AQMA under the current congested conditions in the area.

The AQMAs at Manchester Road / Mayo Avenue (order 1), Manningham Lane / Queen's Road (order 2), Thornton Road (order 3) and Shipley Airedale Road (order 4) will be retained for a further year. Only AQMAs 2 and 4 have ongoing exceedance of air quality objectives. AQMA 1 has a location which is still close to exceeding the annual average limit value for NO_2 and subject to ongoing review by JAQU. AQMA 3

[8] The process of state assessment is undertaken by the Government's Joint Air Quality Unit and assesses progress against meeting national air quality standards. Unlike the LAQM process undertaken by local authorities to establish AQMAs the state assessment has no regard for the presence of relevant receptor points. A roadside location will fail the state assessment if there is public access to a location even if members of the public spend very little time there. This is different to an AQMA which is only declared if members of the public regularly spend periods of time at a location that are comparable with the averaging time of the air quality objectives. The Bradford CAZ must remain in place until the state assessment is met and predicted to remain met with or without the CAZ in place. The first state 1 assessment of the Braford CAZ considered data for the period January 2023 to June 2023 only.

is currently experiencing heavy congestion due to major roadworks which could jeopardise compliance with the air quality objectives during 2024.

A charging Clean Air Zone (CAZ) came into force in Bradford on Monday 26th September 2022 covering the area of Bradford shown in Appendix D. The CAZ was introduced to address ongoing exceedances of annual average limit values for NO_2 in response to a Government issued mandate to bring levels of nitrogen dioxide (NO_2) within legal limits in the shortest possible time. More information about the Clean Air Zone is available here: Breathe Better Bradford website

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
Mayo Avenue / Manchester Road (Order 1)	2006	NO_2 annual mean	An area surrounding the junction of the A6177 and A641 with terrace housing and a primary school close to the roadside	NO	57 Mayo Ave at continuous monitoring station not distance corrected)	No exceedance - highest measured concentration in 2023 35.2 ug/m3 distance corrected tube DT105	5	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Mayo Ave AQMA Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan

Manningham Lane / Queens Road (Order 2)	2006	NO_2 Annual Mean	An area surrounding the junction of the A6177 and A650 with terrace housing close to the roadside	NO	33 (Manningham Lane at continuous monitoring station not distance corrected)	44.2 (Queens Road in line with receptor (fallen from 54 in 2008)	0	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Manningham Lane Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan
Thornton Road (order3)	2006	NO_2 Annual Mean	A canyonised area adjacent to the B6145 with residential accommodation and student accommodation adjacent to the road	NO	35 (Thornton Road continuous monitoring station at relevant receptor)	No exceedance - highest measured concentration in 2023 29.3 ug/m3 at tube DT108 (not distance corrected)	5	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Thornton Road Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan

Shipley Airedale Road (order 4)	2006	NO_2 Annual Mean	An area of the A650 Shipley Airedale Road where apartments are adjacent to multi-lane traffic flow	NO	68 (Shipley Airedale Rd continuous monitoring station not distance corrected)	46.9 (Shipley Airedale Rd distance corrected diffusion tube DT12)	0	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Shipley Airedale Road Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan
Mayo Avenue / Manchester Road (Order 1)	2006	NO_2 1 Hour Mean	An area surrounding the junction of the A6177 and A641 with terrace housing and a primary school close to the roadside	NO	unknown	0 hours exceeded 200, max hourly conc = 159	9	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Mayo Ave AQMA Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan

Manningham Lane / Queens Road (order 2)	2006	NO_2 1 Hour Mean	An area surrounding the junction of the A6177 and A650 with terrace housing close to the roadside	NO	unknown	0 hours exceeded 200, max hourly conc = 87.4	>10 years	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Manningham Lane Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan
Thornton Road (order 3)	2006	NO_2 1 Hour Mean	A canyonised area adjacent to the B6145 with residential accommodation and student accommodation adjacent to the road	NO	unknown	0 hours exceeded 200, max hourly conc=105.8	9	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Thornton Road Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan

Shipley Airedale Road (Order 4)	2006	NO_2 1 Hour Mean	An area of the A650 Shipley Airedale Road where apartments are adjacent to multi-lane traffic flow	NO	unknown	0 hours exceeded 200,max hourly conc = 133.9	>10 years	Bradford Clean Air Plan (2020), Bradford Low Emission Strategy (2013), Bradford AQAP (2009)	Visit the AQAPs for Shipley Airedale Road Link to Bradford Clean Air Plan (CAP) Link to Bradford Low Emission Strategy Link to Bradford Air Quality Action Plan

☒ CBMDC **confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ CBMDC **confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in City of Bradford MDC

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided all the information specified in the Guidance. The use of colour coding in the AQAP table to highlight the expected impact of measures or implementation time was considered particularly useful as was the commentary on Defra's previous appraisal points.

The following areas were identified for future action within ASR reports:

1. **Diagrams of AQMA boundaries to include the location of the nearest monitoring sites**. *An additional high-level map has been added showing the location of the nearest continuous analyser to each AQMA. Maps of individual AQMAs are shown alongside maps of the nearest diffusion tube locations.*
2. **Continued use of commentary on each point raised in the appraisal report recommended.** *This section of the report addresses this point.*
3. **Exceedances of AQOs only should be marked in bold.**
   This has been addressed within this report.
4. **Table A.1 does not mention PM2.5 monitoring for CM2, CM6 and CM8. Nor does it mention SO2 monitoring for PM2.5.**
   Table A.1 of this report includes PM2.5 monitoring at sites CM2, CM6 and CM8 as requested. The second point raised is not clear in terms of action needed. CBMDC does not undertake any SO2 monitoring so is not required to mention it in Table A.1.

The following advice was issued to the council:

1. **As the AQAP has not been updated in the last 5 years, it should be reviewed to reflect the contents of the more recently published LES and CAP to ensure it stays relevant.** *As detailed in the 2023 report all currently available staffing resources are concentrated on continued delivery / evaluation of the CAP / CAZ and development of new air quality improvement measures such as the CASP. It is acknowledged that the original AQAP would benefit from formal updating but under current staffing levels this would detract from the practical delivery and evaluation of air quality improvement measures which the council is treating as a priority. We have recently fully updated the Breathe Better Bradford website which provides a*

clear overview of all current air quality improvement activities being undertaken by CBMDC and this is readily available to any member of the public wishing to view it. A full summary of AQAP measures is also provided within this report. There would be limited value in diverting staff resource onto the production of a revised AQAP at the present time. We have a current Clean Air Plan submitted in 2020 Link to Breathe Better Bradford website information on Bradford B-CAP

2. **While the council's AQMAs 2 and 4 continue to exceed air quality objectives, AQMAs 1 and 3 have been compliant for four consecutive years and should be considered for revocation. Where there have been no exceedances for the past five years, local authorities must proceed with plans to revoke the AQMA.**

   AQMA 2 (Manningham Lane) and AQMA 4 (Shipley Airedale Road) remain in exceedance of the air quality objectives and will be retained for a further year.

   AQMA1 (Manchester Road / Mayo Avenue) was fully compliant with the air quality objectives during 2023 but as detailed elsewhere in this report there is one site that failed the JAQU state 1 assessment of the CAZ and may still require further improvement action. CBMDC considers it would be confusing and may jeopardise the ability to access additional funding if the AQMA was revoked whilst this air quality limit value is still at risk. The usual requirement to revoke an AQMA after 5 years where there has been no exceedance of air quality objectives is fully understood but, in the situation, where a local authority has been mandated to take improvement action based on exceedances of air quality limit values it becomes practically difficult to revoke an AQMA whilst at the same time asking the local population to reduce emissions further in that area.

   AQMA 3 (Thornton Road) has been compliant for 5 years and should now be revoked. However, as detailed elsewhere in this report the area is currently undergoing major changes and experiencing severe congestion. Air quality conditions during 2024 are expected to be worse than those seen in recent years and it would be reputationally damaging for the local authority to revoke the AQMA now only to find an exceedance has arisen at the end of 2024. Once the current works have been completed the air quality situation will be reassessed and the AQMA revoked as soon as possible afterwards.

3. **Defra recommends that Directors of Public Health (DPH) approve draft ASRs. Though the council have not had DPH Sign off this years ASR they have**

included signature from their Air Quality Programme Director who is responsible for air quality monitoring and improvement and who regularly briefs the DPH and Members on all air quality matters.

In Bradford responsibility for air quality improvement sits with the Assistant Director of Sustainability and it has been locally determined that he is the most appropriate person to sign off this report. The DPH is regularly briefed on air quality matters via the Health Protection Committee.

City of Bradford MDC 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. 35 measures are included within Table 2.2, with the type of measure and the progress City of Bradford MDC have made during the reporting year of 2023 presented. 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; the Bradford AQAP, the Bradford Low Emission Strategy, and the more recent Bradford Clean Air Plan (CAP). Some measures have also been delivered via the West Yorkshire Low Emission Strategy (WYLES).

Key completed / ongoing measures during 2023 are:

- **Continued implementation and evaluation of the Bradford Clean Air Zone** – the government mandated Bradford CAZ went live on 26th September 2022 setting minimum emission standards for HGVs, buses, coaches, taxis and LGVs within the Braford Outer Ring Road and into the Aire Valley corridor. The impacts of the scheme on local air quality and health are subject to ongoing evaluation with regular meetings held between the council and JAQU to review progress and agree next steps. A detailed source apportionment study of traffic emissions at locations that remain in exceedance of the air quality limit values is currently being undertaken by CBMDC. Grants are still being made available to residents and business to help with the cost of upgrading their vehicles.
- **Establishment of new Zephyr monitoring network** – in June 2023 a new network of 12 ‘low cost’ air pollution sensors was established to investigate pollutant concentrations in residential areas and close to schools. Data from these sites will be used to investigate the impact of domestic solid fuel burning in residential areas and to

help assess the impact of school street interventions. The network was established using funding from Defra's Air Quality Grant scheme.

- **Launch of Clean Air Schools Programme (CASP)** – Bradford's CASP was formally launched in August 2023 with local schools invited to bid for grants of up to £10,000 to improve air quality and reduce exposure to emissions at their sites. A total of 48 schools applied for funding and all were successful. A total of £ £443,422 has now been allocated to projects including walking buses, bikes, scooters and shelters, classroom air filtration systems and green screens using planting to protect play areas. The scheme has been funded directly form CAZ revenue.
- **Relaunch of Breathe Better Bradford website** – in November 2023 the new Breathe Better Bradford air quality information pages were launched with enhanced public information on sources of air pollution, air quality monitoring, pollutant health impacts, smoke control areas, solid fuel burning advice, work in schools and indoor air quality. Links were also provided to all the council's LAQM and CAZ related work. The new pages can be viewed here Breathe Better Air Quality webpages on CBMDC website
- **Solid fuel / wood burning campaign** – in December 2023 a solid fuel / wood burning public information campaign was launched which ran until the end of March 2024. The campaign included a radio advert and billboards located across the district with messaging related to the health impacts of burning solid fuels and where to find advice on smoke control areas and legal requirements within them. A follow up campaign is planned for autumn 2024. The campaign was launched following research undertaken in conjunction with Sheffield University which identified that solid fuel stove users often do not recognise the impacts that burning can have on their health or fully understand the legislation surrounding the use of stoves, particularly in smoke control areas.
- **Anti-idling staff training sessions –** during 2023 wardens, traffic enforcement staff and taxi licensing staff received in-house training on anti-idling legislation and how to help prevent vehicle idling at a local level. Following these sessions a dedicated schools engagement officer post has now been established within the Sustainability team at CBMDC and this officer is now actively working with wardens to undertaken anti-idling awareness sessions and patrols at local schools.
- **Planning permission granted for district heat energy centre –** In November 2023 planning permission was granted for the development of a privately operated air source heat based energy centre at Thornton Road that will enable the development of a district heat scheme to serve key large buildings within the city centre. The scheme has the potential to replace many old and inefficient gas / biomass boilers across the

city centre and to considerably reduce emissions of NO_2, PM2.5 and CO2. Work is currently ongoing to lay pipes across the city centre to serve the scheme. More details of the scheme can be found here Link to Bradford energy information website

- **Planning application submitted for construction and operation of a hydrogen production facility and hydrogen refuelling station –** In December 2023 a planning application was received for the development of a hydrolysis plant and hydrogen refuelling facility at the former Birkshill Holder station on Peace Street to facilitate the uptake of hydrogen vehicles within the Bradford district. Planning permission for the site was subsequently granted in April 2024. When established the site will allow transition of diesel buses and HGVs to hydrogen fuel cells and will also provide additional EV charging facilities. More details about the scheme can be found here Link to project information on Hygen website
- **School streets pilot schemes tranche 2 and 3** - during 2023 further school street schemes were introduced at Farfield Primary in Buttershaw and at St Philips C of E primary school in Girlington. These schemes have been supported by air pollution monitoring activities and are still being evaluated. Air pollution monitoring has also been placed at two control schools where no intervention has been provided to date. Further school streets are planned in 2024.
- **Continued implementation of the West Yorkshire Transforming Cities Fund (TCF) projects** - during 2023 there was considerable pre-planning undertaken towards implement of several large-scale projects in the centre of Bradford that will improve public realm and improve access to public transport. These include planning / delivery of major infrastructure projects including Park and Ride development, cycle superhighway extension, transport interchange improvements and major junction improvements / relief road provisions. A number of these city centre-based schemes are currently being delivered with works due to be completed by 2025. More details about these schemes can be found here Future Bradford webpages on CBMDC website. Several of these schemes will fundamentally change the way traffic travels around the centre of Bradford and where public transport operates from. As a result of the changes taking place air quality conditions in some parts of the city centre are expected to change considerably. These are being closely monitored to identify levels of improvement and to identify any areas where emissions may potentially increase.
- **Updating of the West Yorkshire Emissions Inventory –** Bradford is currently working with WYCA and the other WT district authorities on a project to enhance the national atmospheric emissions inventory data for the WYCA region. This work is being

undertaken in conjunction with Cambridge Environmental Research Consultants (CERC) and will inform the placement of a new 'low cost' particulate monitoring network across the region. Local data on domestic stove use and emissions from other industrial activities / biomass boilers has been provided to inform the project.

City of Bradford MDC expects the following measures to be completed over the course of the next reporting year (2024):

- **Continued evaluation of the Bradford CAZ –** ongoing monitoring and evaluation by the council and by independent assessors working on behalf of JAQU
- **Completion of round one of the CASP grant scheme –** all grant allocation will be completed during 2024 with some project delivery within schools likely to continue into 2025.
- **Hydrogen test bed facility** - continued support for the development and implementation of the facility
- **District heat network scheme** - continued support for the development and implementation of the energy centre and commitment for council buildings to join the scheme in the future.
- **Investigation of opportunities for anaerobic digestion of food waste** – feasibility of producing methane to power refuse trucks under consideration
- **Launch and evaluation of the HGV electric vehicle trial –** a £25,000 CAZ revenue grant has been provided to support a fully electric HGV trial at Joseph Parrs, Bradford. They will be operating the first zero-tailpipe flatbed HGV with a crane lift at a builders' merchant in the UK on a one-year trial basis starting in 2024.
- **Implementation of third round of school street pilot schemes and launch of play streets** – both interventions managed by CBMDC Public Health Department. The new school streets are expected to launch in summer 2024.
- **Development and delivery of new school educational engagement programme –** a new programme of activities to be delivered in schools is currently being developed by the Sustainability team school engagement officer (employed in February 2024). The programme will include hands on monitoring activities for pupils, identification of plants impacted by pollutants and targeted anti-idling interventions. The programme will be collaborative, working across Council departments such as the Wardens Service, the Road Safety Team, Communications, Public Health and with partners in the NHS (BiB) to complement existing work the Council, and others, are already doing in schools.

- **Delivery of Clean Air Day 2024 schools' event –** a large scale event is planned for CAD 2024 (20th June 2024) with local school children being invited to city hall to take part in air quality related workshop activities including building hydrogen powered model cars, making pollution catchers and finding out more about indoor air pollutants and their sources. The event is being run in partnership with Born in Bradford, Northern Gas and Asthma and Lung UK.
- **Development of a Particulate Reduction Strategy (PRS) –** the first stage of this project (WY emissions inventory update and emission scenario testing) is now approaching completion. Recommendations from this project will be incorporated into a Bradford specific emission reduction strategy during the latter part of 2024.
- **Planning for delivery of an electric bike and electric tuk-tuk scheme –** this scheme will support the ongoing city centre pedestrianisation works by providing a zero-emission alternative to walking in areas where car access has recently been removed.
- **Electric vehicle salary sacrifice scheme** – scheme to be launched for City of Bradford MDC staff during 2024
- **Continued planning and implementation of TCF projects –** Continued planning / delivery of major infrastructure projects including Park and Ride development, cycle superhighway extension, transport interchange improvements and major junction improvements / relief road provisions. As detailed above many of these schemes are currently in the implementation phase.
- **Delivery of Low Emission Vehicle Infrastructure (LEVI) funded projects in Bradford –** WYCA has received LEVI funding to enhance the number of publicly accessible charge points across the region specifically targeting 'close to home' charging for residents without access to off street parking. CBMDC will be facilitating the use of some of this funding within the Bradford district. More information on the WYCA LEVI project is available here Information on LEVI funding on WYCA Your Voice website
- **Further dissemination of air quality information to the public –** with specific emphasis on providing feedback on the success of action planning measures and the positive implications for health
- Continued review of planning applications and requirements for air quality mitigation measures – including the updating of local air quality planning guidance

City of Bradford MDC is working to implement air quality improvement measures in partnership with the following stakeholders:

- Public health / highways department/ neighbourhood warden service at CBMDC
- Local bus operators
- Local business community
- Local schools
- Residents
- Born in Bradford (BiB)
- Joint Air Quality Unit (JAQU)
- University of Leeds
- West Yorkshire Combined Authority (WYCA) and other West Yorkshire local authorities (Kirklees, Calderdale, Leeds, Wakefield)
- University of York
- University of Sheffield
- Northern Gas
- Asthma and Lung UK
- Hygen and N-GEN (hydrogen refuelling facility)
- Bradford Energy Ltd (1 energy UK) – District Heat scheme
- Joseph Parr Bradford Timber and Building Supplies

Progress on the following measures has been slower than expected:

- **Implementation of measures to reduce emissions from Non Road Mobile Machinery (NRMM)**. This is due to insufficient staff time being available at present to implement this project and local pressure to prioritise other air quality improvement activities ahead of this one. The delivery of this project remains an aspiration for the council and will be progressed once sufficient staffing resources can be put in place. It is currently anticipated that this project will commence in summer 2024.

The measures presented in Table 2.2 are arranged in chronological order of introduction except for the top 3 measures which CBMDC has identified for inclusion on UK-Air to assist wider public dissemination. These have been highlighted in yellow as required by Defra.

The effectiveness of all the other measures in Table 2.2 is indicated by the shade of the colours.

The lighter shaded measures will have only a relatively small impact or take longer to implement.

The darker shaded measures are those which are expected to deliver the greatest or fastest emission reductions in Bradford.

Whilst the measures stated above and in Table 2.2 will help to contribute towards and ensure compliance with air quality objectives within all the current AQMAs, CBMDC is currently investigating feasibility of further additional measures not yet prescribed which may be required to ensure compliance with the air quality limit values at all locations in the district. Until this is achieved the CAZ will remain in place.

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	Clean Air Zone (CAZ)	Promoting Low Emission Transport	Low Emission Zone	2019	To be agreed with JAQU once state assessment conditions are met	City of Bradford MDC in partnership with JAQU and local stakeholders	£39.3m Central Government funded project	No	Funded	>£10m	Implementation	The CAZ has resulted in a huge shift in the compliance rate of vehicles. 97% of HGVs, 70% of LGVs and 99.9% of the Bradford taxi fleet are now compliant. During 2023 75% of diffusion tube locations within the CAZ showed improvement compared with 2021.	Compliance with NO_2 air quality standards	CAZ implemented in September 2022 and subject to ongoing evaluation by JAQU	The CAZ required installation of 360 cameras, 2500 signs and 6 new fibre digital rings to monitor compliance. It also required the setting up of a new team within the council to issue grants and administer payments. There were some initial delays due to the covid pandemic but since launch the scheme has operated successfully. Revenue from the CAZ is being re-invested into local air quality improvement programmes such as the CASP programme. The CAZ must remain in place until the state assessment undertaken annually by JAQU is met.
2	Clean Air Schools Programme (CASP)	Other	Other	2023	Ongoing delivery	CBMDC and local schools	CAZ revenue	No	Funded	£100k - £500k	Implementation	Scheme offers up to £10K to individual schools to implement bespoke measures to reduce emissions from traffic outside schools and to minimise exposure of children to pollutants. Scheme is supported by an education programme including anti-idling awareness raising and classroom visits.	Number of grants issues to schools Number of completed projects. Number of school educational visits Number of anti-idling interactions	CASP scheme launched in August 2023. 48 applications for improvement schemes have since been received and approved. New school engagement officer commenced work in March 2024. Anti-idling awareness scheme has recently been relaunched and wardens trained to assist with anti-idling awareness raising activities. Classroom education programme currently in development. The number of successful anti-idling interactions are being recorded on SnapSurvey. To date 88% of people asked to switch off have complied.	CBMDC has ambitions to extend this programme to nursery schools in the district. An air quality grant fund application was submitted in October 2023 to support this extension but was unsuccessful. Anti-idling enforcement is complex and difficult to achieve in practice. The Bradford scheme will focus mainly on awareness raising with enforcement reserved in the first instance for persistent offenders. To date most people approached have complied.

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
3	Hydrogen Test Bed	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV charging, Gas Fuel recharging	2019	2026	N-Gen Energy Solutions Ltd, Hygen Energy Holdings and Ryze Hydrogen / CBMDC/ local fleets operators	Hydrogen Production Business Model / Net Zero Hydrogen Fund	No	Funded	>10m	Planning	The facility will have the capacity to produce 12.5 tonnes of hydrogen per day enough to allow decarbonisation of up to 800 diesel buses and will provide Bradford businesses and residents the opportunity to invest in hydrogen fuel cell technology which has zero tailpipe emissions. EV charging will also be provided at the site.	TBD	Planning permission for the site was granted in April 2024.	The scheme is being delivered by private companies with delivery beyond the direct control of CBMDC.
4	On-going implementation and review of the Bradford Low Emission Strategy (LES)	Policy Guidance and Development Control	Low Emissions Strategy	2013	Policy completed 2013.	CBMDC, WYCA, BiB, Local universities, local developers	Defra air quality grant of £102,000 provided to develop the LES. Various Government/ WYCA/CBMDC/BiB/ academia funded infrastructure / research/ education projects delivered as part of the LES.	Yes	Funded	£100K-£500K	Implementation	Contains many policies to address emissions from vehicles and other sources in Bradford. Overarching policy for measures 5 to 13 in this table. Air quality in Bradford has steadily improved since 2013 as detailed in this report.	Level of measured ongoing air quality improvement in Bradford AQMAs	This is a live document subject to on-going local delivery and review in response to national, regional, and local policy developments	Availability of staff to continually update and implement measures. Availability of funding for major schemes and the amount of time and resources needed to develop successful funding bids.
5	Bradford low emission planning guidance	Policy Guidance and Development Control	Clean Air Planning and Policy Guidance	2013	Policy completed 2013.	City of Bradford MDC, Local developers	Defra air quality grant of £102,000 provided to develop the LES and associated guidance	Yes	Funded	£100K-£500K	Implementation	Prevention and mitigation of vehicle and point source emissions from new development assessed on a case by cases basis.	Number of EV charging points delivered on new developments. (indicator currently under review as EV charging now provided predominantly through building control regulations)	Planning applications reviewed regularly since 2014 Number of EV charging points conditioned on new developments estimated to be more than 8,000+ Guidance requires update to take account of new building regulation requirements in relation to EV charging points.	Availability of staff to update the planning guidance in response to building control and planning policy changes. Level of planning enforcement able to be undertaken at a local level due to staffing constraints Increasing workload with respect to number of planning applications requiring review and comment.
6	Bradford / WY LEZ feasibility study	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2013	2015	CBMDC in conjunction with City of Leeds Council	DEFRA air quality grant 2013 £50,000	Yes	Funded	£50k -£100K for feasibility study	Aborted	LEZ study indicated NOx emission of 195.6 tonnes on Bradford outer ring road. The more recent CAP proposals are expected to achieve full compliance with the NO_2 objectives across the whole district by 2023.	Not applicable – scheme not progressed	LEZ not implemented. Superseded by Bradford Clean Air Plan (CAP) / CAZ	Following completion of the LEZ feasibility study both Leeds and Bradford were mandated to undertake new CAP feasibility studies at different times resulting in two different CAZ plans to replace the regional LEZ concept. The Leeds CAZ is

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
															currently on hold. The Bradford CAZ commenced in September 2022.
7	Feasibility study for Alternate Fuel Centre	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2013	2013	City of Bradford MDC	Feasibility study funded from DEFRA LES funding	Yes	Funded	<£10K	Completed	77 tonnes NOx saving predicted from gas re-fuelling facilities (from 2013 feasibility study)	Not applicable – feasibility study only	Feasibility study completed. Gas vehicle trials completed.	Feasibility of producing biomethane from compulsory food waste collections (from 2026 onwards) to fuel refuse trucks is currently being considered.
8	Bradford bus retrofitting programme	Vehicle fleet efficiency	Vehicle retrofitting programmes	2014	2015	City of Bradford MDC in partnership with local bus operators	CVTF (2014) £394,998	No	Funded	£100K-£500K	Completed	Real world (PEMS) emission testing of the retrofitted buses showed a 95% reduction in NOx emissions and improvements in air quality in Manningham Lane	Number of buses retrofitted	25 Euro III buses in Bradford retrofitted with SCRT. 11 in the city centre and 14 on Manningham Lane	Bradford CAZ-C implemented in September 2022 now sets minimum Euro 6 equivalent standard for all local bus services operating in the CAZ.
9	Voluntary emission standards for buses	Promoting Low Emission Transport	Other	2015	2021	City of Bradford MDC / (WYCA / Bus operators	n/a - additional improvements funded by bus operators	No	Not funded	Cost reflects CBMDC staff time on liaison with bus companies only, not the cost of improvements made.	Completed	24.7 tonnes of NOx reduction estimated for first local agreed target of Euro IV by 2018	Number of buses meeting locally agreed emission standard targets	Good progress was made with locally negotiated bus fleet emission reductions prior to the introduction of the CAZ standards that are now driving local bus improvements.	Measure now superseded by formal CAZ entry standards for buses of Euro 6 equivalent.
10	Car clubs	Alternatives to private vehicle use	Car Clubs	2015	On-going implementation	CBMDC/ WYCA / Enterprise	No funding is provided to Enterprise to run the scheme. The original contract provided upfront promotion and vehicle leasing funding only (WYCA Local Transport Plan ITB funding).	No	Partially Funded	<10k	Implementation	Not measured by CBMDC	Number of registered car club members	Membership of the car club at Bradford sites increased by 158% in 2022 compared to 2021. There were 2236 bookings made in 2022 compared with 1637 in 2021. The site with highest use is at South Street, Keighley.	Membership and usage of the car club continues to grow but is still below capacity. CBMDC continues to promote the car club and seeks to obtain space and EV charging for car club bays on new developments.
11	Adoption of West Yorkshire Low Emission Strategy	Policy Guidance and Development Control	Low Emissions Strategy	2016	Policy completed 2016.	City of Bradford MDC in conjunction with City of Leeds Council, Wakefield City Council, Calderdale Council and Kirklees Council	£150,0000 DEFRA air quality grant (2012) to develop the strategy and additional contributions from the WY LAs to deliver various measures around the region	Yes	Funded	£100K-£500K	Implementation	Contains many policies to address emissions from vehicles and other sources in West Yorkshire	Level of measured ongoing air quality in West Yorkshire	This is a live document subject to on-going local delivery and review in response to national, regional and local policy developments	Loss of dedicated WYLES officer post in 2021 and availability of remaining WY officers to update the WYLES and ensure continued implementation. Availability of funding for major schemes and the amount of time and resources needed to develop successful regional funding bids.
12	WYLES procurement guidance	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2016	2016	City of Bradford MDC in conjunction with City of Leeds Council, Wakefield City Council, Calderdale Council and Kirklees Council	DEFRA air quality grant 2012 £1500000	Yes	Funded	£100K-£500K	implementation	Reduced emission impact from vehicle-based services and transport procured by WY LAs. Contracts assessed on an individual basis by	Number of contracts the policy is applied to in Bradford	Ongoing implementation within individual LAs	LEV procurement policy 5% of award decision as part of procurement policy (social values)

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
												several LAs. Overall impact difficult to quantify.			
13	Low emission procurement policies for City of Bradford MDC fleet	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2013	2016	City of Bradford MDC	In house project	No	Funded	<£10K	Implementation	Reduction of 332t/CO2e 2014/15-2015/16 via procurement of 7 electric vans and 2 electric pool cars with 3 additional charging stations	Number of CAZ compliant vehicles in CBMDC fleet	Whole life costs have been introduced into vehicle procurement considerations including air quality damage costs.	CBMDC working towards making all council fleet cars and vans < 3.5 tonnes electric.
14	Cycle Super Highway	Transport Planning and Infrastructure	Cycle network	2013	2016	City of Bradford MDC / WYCA (Metro)/ City Connect Partnership	DfT £18M, £11M local funding	No	Funded	>£10M	Implementation	1.7 million bike trips were recorded on the cycle superhighway between 2016 and 2021.	Number of cycle journeys	Main scheme opened in 2016. Additional Shipley to Bradford (Canal Road) section opened May 2019. 118475 cycle trips recorded on the Leeds Old Road section since opening.	Further extension on Thornton Road in Bradford currently being implemented.
15	Delivery of new railway stations at Apperley Bridge and Low Moor	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2000	Apperley Bridge opened Dec 2015	City of Bradford MDC / WYCA	Apperley Bridge £8 million (WYCA) Low Moor £10.8 million (WYCA)	No	Funded	>£10m	Completed	The new stations encourage rail travel as an alternative to the car. The actual emission savings to date have not been calculated.	Passenger numbers using the stations	Passenger numbers have increased at Apperley Bridge from 96,418 in 2015/16 to 362,988 in 2022/23. At Low Moor numbers have increased from 133,060 in 2017/18 to 199,418 in 2022/23.	The pandemic resulted in lower use of trains in 2020 and 2021 but passenger numbers have recovered and are still growing. Additional improvements have been made to improve parking at Steeton and Silsden station car park to encourage more rail travel in the district.
16	Staff Travel Plan	Promoting Travel Alternatives	Workplace Travel Planning	2013	2015	City of Bradford MDC	Developed in house	No	Not funded	<£10k	Completed	Plan aims to reduce single occupancy car trips by 5% over 5 years and reduce car commuter trips by staff from 62% (2014) to 57% by 2029	Number of single occupancy car trips and reduction in staff commuter car trips.	Progress monitoring not yet completed.	Plan is actively promoted to new starters. Progress monitoring and plan review /update due.
17	Identifying barriers to walking to school	Promoting Travel Alternatives	School Travel Plans	2017	School travel plan policy adopted 2017	City of Bradford MDC / Bradford Institute of Health Research / Born in Bradford / Local education providers	Research partnership funding	No	Not funded	£10k to £50k	Completed	Study identified best policy measures to include in the CBMDC school travel plan policy. Subsequent policy continues to address school travel. Overall impact difficult to quantify.	Not applicable	Bradford school travel plan published 2017.School streets programme currently being developed to address some of the issues identified in the study	Willingness of parents and schools to engage with the research and/or change behaviour. On-going on-site management of school street closures is a challenge.
18	Eco-stars Fleet Recognition Scheme	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2017	2020	WYLES steering group / City of Bradford MDC / ECO-stars scheme	WYCA funded	No	Funded	£10K to £50K	Completed	The ECO stars scheme claims a typical van operator could see its annual output of carbon dioxide fall by six tonnes per year	Number of Bradford based operators joining the scheme	Scheme operated in West Yorkshire between 2017 and 2020	The introduction of the West Yorkshire ECO-stars scheme was a measure in the WYLES. Local scheme was reliant on an annual funding allocation which was not renewed in 2021.
19	West Yorkshire bus retrofitting project	Vehicle fleet efficiency	Vehicle retrofitting programmes	2018	2020	City of Bradford MDC in partnership with DEFRA, WYCA, West Yorkshire bus operators	DEFRA - £7.186 million LPTIP - £850k	No	Not funded	£1m to £10m	Completed	Programme estimated to have delivered 560 tonnes of NOx removal annually	Not applicable	Programme retrofitted 471 buses across WY	Bradford CAZ-C implemented in September 2022 now sets minimum Euro 6 equivalent standard for all local

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
												across the WY region			bus services operating in the CAZ.
20	Encouraging uptake of low emission taxis	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2020	City of Bradford MDC / WYCA/ ENGIE	OLEV £2 million WYCA and partner LAs £1.2 million match funding	No	Funded	£1m-£10m	Completed	318,141kW of energy has been used by the charging points in Bradford to date which equates to a CO2 saving of 254,210 kg.	Number of charges undertaken	22 Rapid chargers installed across the Bradford District each has 2 bays one for public and the other designated for Taxi use. 100+ charge points installed across wider WY region. 3,608 drivers are known to be using the charging network with 13981 charges having taken place to date.	This is the biggest rapid charging network outside London.
21	Public awareness	Public Information	Via other mechanisms	2016	Delivery ongoing	City of Bradford MDC / NHS / Born in Bradford/ Universities	Early activities funded mainly by partners. Government funded CAP settlement included funding for public engagement / marketing campaign for the CAP / CAZ.	No	Funded	£100-£500K	Implementation	Not quantified	-	Activities to date have included raising public awareness through the use of street infographics on air pollution stations, air quality and health online petition in partnership with Doctors and academics at the University of Leeds, workshops held in schools and anti-idling awareness raising. Development of the Breathe Better Bradford public information website and a 1 hour drive campaign to raise awareness about the CAZ. The Breathe Better Bradford website was developed further in 2023 to include more information on sources of air pollutants, impacts and detailed information on location of smoke control areas and rules for burning in these areas, A wood burning public information campaign was undertaken in winter 2023/24. A large scale event for schools is planned for CAD 2024.	Evaluating the reach / impact of public information campaigns is more difficult following stricter rules on collection of cookies from council website interactions. Lack of evidence on impact of schemes could be a barrier to ongoing implementation.
22	School Streets Pilot Schemes	Traffic Management	Other	2021	2024	CBMDC/ Local schools/ Act Early Research Consortium	WYCA funded £66,000	No	Funded	£10K to £50K	Implementation	AQ impacts of first round not measured. Monitoring was put in place to	Self-reported measures on travel modes to school/perceptions of school	First pilot schemes trialled in 2021/2022. Second round commenced in	Staff time/capacity to put out signs and marshall the schemes have been the main issues

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
												evaluate AQ impacts for the second round of interventions that commenced in June 2023.	environment pre- and post-school street. Traffic Counts. AQ monitoring results (before and after)	June 2023 Third round due to commence in 2024.	identified in the first rounds. Due to the relatively short period of time the interventions are in place each day it has been difficult to identify significant reductions in pollutant concentrations using diffusion tubes. Real-time low-cost sensor monitoring has been placed at some participating schools and control sites but last minute changes to participating school have limited the use of this data.
23	ZEBRA funded electric buses	Promoting Low Emission Transport	Public vehicle Procurement – Prioritising uptake of low emission vehicles	2022	2024	City of Bradford MDC in partnership with local bus operators and WYCA	£10M ZEBRA bus funding for 32 new electric buses in Bradford to support CAZ implementation. Some private investment from local bus operator	No	Funded	>£10M	Implementation	Predicted 0.5µg/m3 reduction in NO_2 on Godwin Street and Sunbridge Road.	WYCA project	ZEBRA funding secured and buses being procured for deployment in 2024	The buses will operate on a shuttle corridor between Keighley and Bradford. Original plans for an electric shuttle to Leeds Bradford Airport are not progressing due to a land ownership issue. All 32 buses will now be based at the Keighley depot and travel predominantly within Bradford
24	South Bradford Park and Ride scheme	Alternatives to private vehicle use	Bus based Park and Ride	2019	Currently unknown	CBMDC / WYCA	To be delivered as part of the wider West Yorkshire Transforming Cities Fund. £317 million from the Department for Transport (DfT) plus local match funding of up to £140 million. Link to TCF information on WYCA Your Voice website	No	Partially funded	>£10M	Planning	Impact assessment work ongoing at present. Should improve air quality in Mayo Avenue AQMA and the wider CAZ especially around Manchester Road	WYCA project	Due to increased costs the original scheme has been scaled back. Proposals for dedicated bus and cycle expressways on Manchester Road have been removed with the P&R now to be served by existing bus stops and cycle routes to be provided on quieter side streets. In the first instance works will concentrate on delivery of bus and cycle route upgrades. Plans for the P&R facility at Odsal stadium will form a second later phase.	Funding is a currently a barrier to delivering the P&R scheme. The revised scheme will not provide the rapid transport link into the city centre originally planned and the dedicated P&R facility will be delayed. The remaining improvements should encourage some modal shift to cycling and reduce current bus journey times. More information on this project is available on WYCA Your Voice website.
25	Bradford Interchange Enhanced rail Gateway	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2019	Works to commence by 2023	CBMDC / WYCA	To be delivered as part of the wider West Yorkshire Transforming Cities Fund. £317 million from the Department for	No	Funded	>£10M	Implementation	Scheme will improve access and environment around the rail / bus interchange to encourage further uptake of low	WYCA project	Scheme currently in the process of being delivered.	Long term ambition is still to have a new Northern Powerhouse rail station in Bradford to replace the current interchange

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
							Transport (DfT) plus local match funding of up to £140 million. Link to TCF information on WYCA Your Voice website					emission transport options. Scheme will also incorporate low emission infrastructure for cars and taxis.			and Foster Square stations. The scaling back of the HS2 scheme is likely to considerably set back the timeline for new rail facilities in Bradford making upgrade of the current interchange an essential interim measure. More information on this project is available on WYCA Your Voice website.
26	Bradford City Centre Cycling and Walking Improvements	Transport Planning and Infrastructure	Cycle network	2019	Works to commence by 2023	CBMDC / WYCA	To be delivered as part of the wider West Yorkshire Transforming Cities Fund. £317 million from the Department for Transport (DfT) plus local match funding of up to £140 million. Link to TCF information on WYCA Your Voice website	No	Funded	>£10m	Implementation	The scheme will implement a series of bus, cycle and pedestrian improvement measures to promote bus use and enable safe walking and cycling to and within Bradford City Centre. Large reductions in emissions expected in some locations, others may experience slight increases due to displacement of bus stops etc.	WYCA project	Scheme currently in the process of being delivered. Monitoring of air quality continuing throughout the works and new locations being added as location of bus stops etc change.	More information on the proposed walking, cycling and bus infrastructure upgrades can be found on WYCA Your Voice website.
27	West Bradford Cycle Superhighway extension	Transport Planning and Infrastructure	Cycle network	2019	Works to commence by 2023	CBMDC / WYCA	To be delivered as part of the wider West Yorkshire Transforming Cities Fund. £317 million from the Department for Transport (DfT) plus local match funding of up to £140 million. Link to TCF information on WYCA Your Voice website	No	Funded	>£1m	Implementation	The scheme will provide an additional link to the existing cycle superhighway and will run through the Thornton Road AQMA	WYCA project	Business case completed and public consultation took place in 2020. Detailed scheme design and planning in progress	This project and laying of district heat network pipes currently causing disruption to traffic and increased pollution in the Thornton Road AQMA delaying the planned revocation of the AQMA. More information on the West Bradford Cycle Superhighway extension can be found on WYCA Your Voice website.
28	Particle Reduction Strategy	Policy Guidance and Development Control	Low Emissions Strategy	2021	2025	CBMDC universities/BiB	Defra AQ grant fund 2021/22 £253k	Yes	Funded	£100k to £500k	Implementation	The strategy will aim to deliver PM reduction across the whole district with a focus on domestic and construction emissions. An emission impact assessment will form part of the strategy development.	Not yet set	A study into indoor air quality in homes has been undertaken in partnership with University of York and BiB and a research questionnaire around use of domestic wood burning stoves was undertaken by Sheffield University in 2023. Based on the findings of the report a solid fuel	Plans to develop a scheme to reduce emissions from Non Road Mobile Machinery (NRMM) on construction sites has been delayed due to a lack of staff resources to progress it, it will be revisited in the coming year with a view to aligning the project with exploratory NRMM currently being

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
														burning information campaign was delivered in winter 23/24. A network of low cost PM analysers was deployed into residential areas in summer 2023. The Bradford Council Breathe Better Bradford website has been updated to include more information on particulate pollution. A regional update of the PM emissions inventory is in progress and scenario testing for different PM reduction measures has been undertaken.	carried out by DEFRA
29	District Heat Network	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	2023	2024	CBMDC and Bradford Energy Ltd	TBD	NO	Partly funded by Green Heat Network Fund (GHNF) from BEIS and partly through private investment from 1 Energy	> £10 million	Planning	8,000 tonnes/yr of carbon	Tonnes CO2Eq reduction NO_2 reduction	The DHN is at implementation stage with pipes currently being installed. CBMDC have supported development of this project but delivery is via a 3rd party supplier. It will be largest air source heat district heating scheme in the UK.	The DHN will improve air quality via offset of older individual boiler plant. The DHN is substantially powered via air source heat pump offering a clean low carbon alternative to other heating sources. There is a backup gas supply for winter spikes in demand and other unforeseen reduction is supply via air source.
30	West Yorkshire PIIP project	Public information	Via other mechanisms	2023	2025	WYCA, CBMDC, Kirklees Council, Wakefield Council, Leeds City Council, Calderdale Council	Defra AQ Grant	Yes	funded	£100k to £500k	Implementation	Scheme aimed at highlighting pollutant levels and encouraging behavioural change	not quantified	Procurement of new low-cost analyser network completed and data dashboard in development. New analyser to be deployed by autumn 2024.	Complex and lengthy procurement process due number of potential suppliers and large variation in cost and quality of analysers
31	WY EV charging network - LEVI	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	TBD	WYCA / CBMDC, Kirklees Council, Wakefield Council, Leeds City Council, Calderdale Council	LEVI funding	no	funded	> £10 million	planning	The WY LEVI project will enhance the number of publicly accessible charge points across the region specifically targeting 'close to home' charging for residents without access to off street parking	Scheme will make electric zero emission vehicles a more viable option for a greater number of WY residents	CBMDC is drawing up proposals for implementation in conjunction with WYCA There are currently 832 publicly available electric vehicle charging devices in West Yorkshire. Government figures predict over 10,000 may be needed by 2030 to meet demand	Finding suitable locations and grid capacity may be barriers to implementation in some areas.
32	Electric HGV trial	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake	2023	2024	CBMDC and local partners (Joseph Parr, Bradford)	CAZ revenue funded	No	Funded	£10k - £50k	Implementation	Emission savings from the trial will be minimal but if the technology	Number of zero emission miles completed during 1 year trial	Availability of funding was advertised in 2023. A local company	Level of interest from local companies to take part.

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
			of low emission vehicles									can be demonstrated to work it could result in further grants for electric HGVs and potentially 1000 tonnes of emission savings across the Bradford district and beyond.		(Joseph Parr, Bradford) has been recruited and an electric flatbed HGV with crane lift procured for building supplies delivery is now operational.	
33	salary sacrifice scheme for staff EV purchases	Promoting Low Emission Transport	Other	2024	Ongoing availability	CBMDC / car lease company	Salary sacrifice scheme with tax advantages for staff -not directly funded	no	Not funded	No direct cost to CBMDC	Planning	Will depend on level of uptake from CBMDC staff	Number of electric vehicles leased by CBMDC staff	Scheme administration being set up and approved prior to launch.	Requires significant additional administration costs to set up.
34	Anerobic digestion and methane production feasibility study	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	TBD	CBMDC	Funding received from government to facilitate new statutory food waste collection duties form 2026 onwards. No funding source yet identified for development of digestion plant and provision of gas refuse trucks	no	Not funded	> £10 million	Planning	Potentially large reductions in greenhouse gas emissions from prevention of decomposition of food waste in landfill and large reductions in NOx and PM emissions from diesel waste collection fleet.	Not yet determined	Business case development	Cost of providing digestion plant and converted refuse trucks may be prohibitive. Planning permission for digestor location will need to be sought.
35	EV bike hire / electric tuk tuk hire scheme	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2024	2025	CBMDC and delivery partners (to be procured)	CAZ revenue funded	no	funded	£500k to £1 million	planning	Will enable alternative forms of zero emission transport to be used in newly pedestrianised city centre to transport goods and people with scope to expand to other urban centres in the district via existing off road cycling infrastructure	Not yet determined	Business case development	Procurement process needed to identify a suitable supplier of bikes / tuk-tuks.

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[9], 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.

In Bradford, emissions of man-made fine particles PM2.5 are estimated to cause 5.5[10]% of total mortality. Road transport emissions are a significant source of fine particulate but locally elevated concentrations can also arise from biomass combustion, heating, industry, agriculture and wind-blown dust. The World Health Organisation (WHO) classifies diesel exhaust emissions as carcinogenic.

Born in Bradford (BiB) is one of the largest and most important medical research studies currently being undertaken in the UK. It is tracking the lives of 13,500 Bradford born babies (and their families) to ascertain more about the causes of childhood illness. Their work has identified important linkages between air pollution exposure including PM2.5 related impacts. Office for Health Improvement and Disparities (OHID) data shows that rates of asthma admissions for 0 to 9 year olds in Bradford is 279.1 per 100,000 compared to the England figure of 172.7. BiB have identified that up to 38% of the total annual childhood asthma cases may be attributable to air pollution[11]. The council continues to collaborate closely with BiB, the aim being to develop evidence-based policy making for air quality improvement.

City of Bradford MDC is taking the following measures to address $PM_{2.5}$:

- **Long term PM2.5 monitoring** - City of Bradford MDC Public Health Department has funded PM2.5 monitoring at three of the real time air pollution stations since 2013. These sites are currently located at Tong Street, Keighley and Shipley Airedale Road. The data from these sites is used to inform major research programmes (such as the

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

[10] Fingertips Public Health data (2022) – Office for Health Improvement and Disparities

[11] Born in Bradford:10 Key findings for Policy and Practice 2019 report

Born in Bradford (BiB) programme) and is made available to the public via the Air Quality net website available here: Link to Air Quality net Data Management website. During 2024 the operators of the national AURN network plan to establish an additional real time PM2.5 monitoring location within the Bradford District. More information on this new site will be reported in the 2025 ASR.

- **New low cost CBMDC monitoring network** – in June 2023 a new network of 12 'low cost' Zephyr air pollution sensors was established within the Bradford district to investigate pollutant concentrations in residential areas and close to schools. The units simultaneously measure PM10, PM2.5, NO_2, O3 and CO2. Data from these sites will be used to investigate the impact of domestic solid fuel burning in residential areas and to help assess the impact of school street interventions. The network was established using funding from Defra's Air Quality Grant scheme. Results obtained from the June to December 2023 monitoring period are discussed further in section 3.2.2 Data from these sites is independently screened and managed by the council's independent data management contractor (AQDM Services).
- **Development of West Yorkshire PM monitoring network and public information dashboard (PIIP project) -** an additional 5 Zephyrs will be added to the Bradford low cost analyser network during 2024 as part of the establishment of a regional low cost analyser network within the wider West Yorkshire region. These additional units will be funded from a Defra air quality grant obtained jointly by WYCA and the WY district authorities. A WY regional air quality dashboard is being developed to host the air quality data that will be collected from the new WY low-cost sensor network. Data from the new WY sensor network will be managed through a collaboration with Leeds University and Leeds Beckett University.
- **Bradford CAZ -** has removed many older diesel vehicles from Bradford's roads which were a significant former source of exhaust PM2.5 emissions. These have been replaced with either cleaner Euro 6 diesel vehicles, Euro 4-6 petrol vehicles or hybrid and zero emission electric vehicles. Whilst the CAZ vehicle emission upgrades have removed significant amounts of exhaust related PM2.5 emissions a significant amount of PM2.5 emissions relating to brake and tyre wear remain. It is therefore important that the council tackles other sources of PM2.5 emissions in the district and continues work to facilitate the use of other modes of transport.
- **Electric HGV trial -** during 2024 the council will be supporting a local business to trial a fully electric HGV. A revenue grant of up to £25K will be provided to support a one-

year trial project. Transitioning HGVs to electric has the potential to significantly reduce emissions of PM2.5 in the Bradford district. This trial is being funded from CAZ revenue.

- **Clean Air taxi programme** – Bradford is still offering Clean Air Fully Electric taxi grants to eligible drivers of vehicles licensed with Bradford council. Most of the taxi fleet has already been upgraded to CAZ standards (Euro 6 diesel or Euro 4 petrol hybrid) but further transition towards fully electric taxis will offer further air quality improvement. There is opportunity to further reduce diesel PM2.5 emissions if some of the larger diesel based hackney cabs take up the offer. More details on the scheme are available here Clean Air Fully Electric taxi grant scheme information on CBMDC website. £4.1m of the remaining CAZ grant funds have been set aside for upgrades to fully electric licensed vehicles.
- **Hydrogen production and refuelling centre** – as detailed earlier in this document planning permission has been granted for the development of a hydrolysis plant and hydrogen refuelling facility at the former Birkshill Holder station on Peace Street. This will facilitate the transition of heavy diesel vehicles (HGVs and buses) towards the use of hydrogen fuel cells within significant potential to reduce emissions of diesel based PM2.5.
- **District heat energy centre** – planning permission has been granted for an air source heat pump-based energy centre on Thornton Road which could potentially replace older gas and biomass plant in Bradford city centre via a district heat scheme arrangement. Gas boilers are not a significant source of PM2.5 emissions but some of the older biomass plant in the city will have considerable emissions of PM2.5 that could be eliminated via the district heat scheme.
- **Anti-idling campaign –** as detailed in the previous section a new school engagement officer has been employed and is now actively working with council wardens to undertake ant-idling awareness and patrols at local schools. As many private cars emit diesel particulate this measure will help address PM2.5 emissions near schools as well as reducing nitrogen dioxide emissions.
- **West Yorkshire LEVI project –** the LEVI projects will enhance the number of publicly accessible charge points across the region specifically targeting ‘close to home’ charging for residents without access to off street parking. This will offer more opportunity for residents to transition to zero emission vehicles if they are able. As many private vehicles currently run on diesel the LEVI project provides an opportunity to further reduce PM2.5 emissions as well as NOx emissions.

- **Bradford Particulate Reduction Strategy (PRS) -** over the past two years CBMDC has been working closely with BiB, the University of York, the University of Sheffield and the West Yorkshire Combined Authority (WYCA) to progress implementation of a Particle Reduction Strategy (PRS). Activities so far include:
  - **Indoor air quality measurements (including PM2.5) undertaken in 300 homes around Bradford by the University of York.** This forms part of the wider INGENIOUS research programme designed to investigate the causes of indoor air pollution in homes and develop intervention programmes. The results of this work will be used to develop targeted interventions and advice for householders to reduce exposure to pollutants in the home.
    Link to INGENIOUS project on University of York website
  - **Domestic solid fuel burning research questionnaire by Sheffield University** - this research investigated the reasons why some residents opt to use solid fuel heating appliances and what steps they currently take to minimise emissions from these appliances inside and outside their home. The headline results from this questionnaire are included at Appendix F of this report. It was identified from the research that many users of solid fuel appliances are currently unaware of the potential impacts on their health and often do not fully understand or follow smoke control area rules.
  - **Solid fuel / wood burning campaign -** the main pollutant of concern from domestic solid fuel burning activities is PM2.5. The solid fuel /wood burning campaign undertaken from December 2023 to March 2024 sought to highlight the health impacts of solid fuel appliances and to educate users on the location of SCAs and requirements within these areas. It was developed using intelligence gathered from the Sheffield research questionnaire findings. The poster and radio advert campaign were used to signpost people to the more detailed information and advice around domestic solid fuel burning on the updated Breathe Better Bradford website. A follow up campaign aimed at changing behaviours in relation to solid fuel use is planned for autumn 2024.
  - **Update of Breathe Better Bradford website** - during 2023 a large number of new pages were added to the Breathe Better Bradford website including information on:
    - Sources of PM2.5
    - Health impacts of PM2.5

- Information on PM2.5 air quality monitoring in Bradford
- Information and advice on how to reduce exposure to PM2.5
- Locations of smoke control areas
- Smoke control area rules.
- Advice on how to burn more cleanly.
- Advice on purchase and labelling of Eco-stoves

The new website went live in November 2023.

- **Updated regional particulate emission database** – Bradford has been working with WYCA, WY district authorities and CERC to compile an update regional emission database. This has more granularity with respect to locations of domestic solid fuel burning appliances and industrial / biomass emissions of PM2.5 than the national NAEI. The revised emission base is being used to undertake high level scenario testing of possible regional PM2.5 emission interventions. The outcomes of this scenario testing work will form the basis of the Particulate Reduction Strategy (PRS) for Bradford. This will complement the existing Bradford Clean Air Plan (B-CAP) (increasing its scope beyond NO_2 reduction mainly from traffic) and will also support Bradford's carbon reduction programme and wider measures to address health inequalities in the city.
- **Review of planning applications for biomass boilers and other processes likely to give rise to significant PM2.5 emissions –** air quality staff at CBMDC are routinely consulted on any planning applications for combustion processes and any other activities such as quarrying which could give rise to significant PM2.5 emissions. Staff check the validity of air quality impact reports submitted with these applications (or request them if not provided). In some cases, it is recommended that applications are refused where it is considered they will have a detrimental impact on the health of the surrounding population. In other cases, additional emission mitigation is requested.
- **Non-Road Mobile Machinery (NRMM) project** - As most Non-Road Mobile Machinery (used mainly in construction and agriculture) is diesel operated it can be a significant source of PM2.5. Bradford has received Defra air quality grant funding to explore potential schemes to control these types of emissions like those already operational in London. It is intended to progress this work during the latter part of 2024.

In addition to the above projects outlined above other existing measures in the local actions table (Table 2.2) are expected to deliver further reductions in PM2.5 emissions:

- Continued implementation of the Bradford and West Yorkshire Low Emission Strategies (measure 4 and 11) which aim to minimise emissions of all pollutants (including PM2.5) from a wide range of local authority activities. The updated version of the WYLES (currently in development) will place a greater emphasis on reducing PM2.5 emissions than the current plan.
- Continued implementation of the Bradford and West Yorkshire Low Emission Planning Guidance (measure 5) which seeks to mitigate emissions of all pollutants (including PM2.5) from developments in the West Yorkshire region. Specifically, the guidance encourages the use of electric vehicles and requires the undertaking of Construction Dust risk assessments and development of dust management plans to reduce PM emissions during construction and demolition.
- Further role out of car clubs (measure 10) reducing the need for second car ownership and allowing access to newer and alternatively fuelled vehicles that often have lower PM2.5 emissions than privately owned vehicles.
- Continued implementation of low emission procurement policies (measure 12) which will further reduce PM2.5 emissions from vehicles operated by City of Bradford MDC.
- Introduction of the TCF schemes in central Bradford to improve public realm, encourage cycling and walking and reduce emissions in the city centre and other urban centres within the district.
- Further development of the Cycle Superhighway (measure 14) to allow increasing numbers of trips to be made by bike, reducing both tailpipe and road contact based PM2.5 emissions from vehicles.
- Encouraging further use of new rail stations at Apperley Bridge and Low Moor (measure 15) to reduce road-based trips (reducing both exhaust and road based PM2.5 emissions).
- Further promotion of staff travel plan (measure 16) and encouraging staff to buy electric cars through the salary sacrifice scheme (measure 33) to reduce PM2.5 emissions during travel to work by City of Bradford MDC staff.

Smoke Control Areas

Large areas of Bradford are designated as Smoke Control Areas (SCAs). Within these areas it is an offence to emit visible smoke from a chimney. Fixed Penalty Notices (FPNs) can now be issued for emission of smoke in SCAs.

Maps showing the extent of SCAs in Bradford can be found here:

Link to Smoke Control area information on CBMDC website

More information on smoke control rules can be found here:

Link to smoke control rules on UK Government website

Smoke control areas in Bradford are enforced by the Environmental Health Department. During 2023 there were 44 complaints about domestic smoke emissions received. 43 observation visits were made resulting in 26 warning letters and 1 Community Protection Warning. No financial penalties were issued for smoke control offences.

Domestic smoke emissions from chimneys in any location can under some circumstances constitute a statutory nuisance. Investigate of statutory nuisance complaints is also undertaken by the Environmental Health Department.

More information on nuisance provisions in relation to domestic emissions can be found here:

Link to UK Government advice page on smoke and statutory nuisances

Bonfires

Bonfires can be another significant source of $PM_{2.5}$ emissions. City of Bradford MDC provides advice on bonfires via this website

Link to nuisance bonfire advice on CBMDC website

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

This section sets out the monitoring undertaken within 2023 by City of Bradford MDC 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

City of Bradford MDC undertook automatic (continuous) monitoring at 7 sites during 2023. 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. The UK air quality net page presents automatic monitoring results for monitoring undertaken by City of Bradford MDC. Results for the AURN (Automatic and Urban Rural Network) site at Mayo Avenue are available on the UK air website here: link to Bradford Mayo Avenue information on UK air website.

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

City of Bradford MDC undertook non- automatic (i.e. passive) monitoring of NO_2 at 209 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 or can be viewed here GIS map of Bradford Diffusion Tube data. 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.

Figure A.3**: Trends in Annual Mean NO_2 Concentrations in Mayo Avenue AQMA (order 1)**

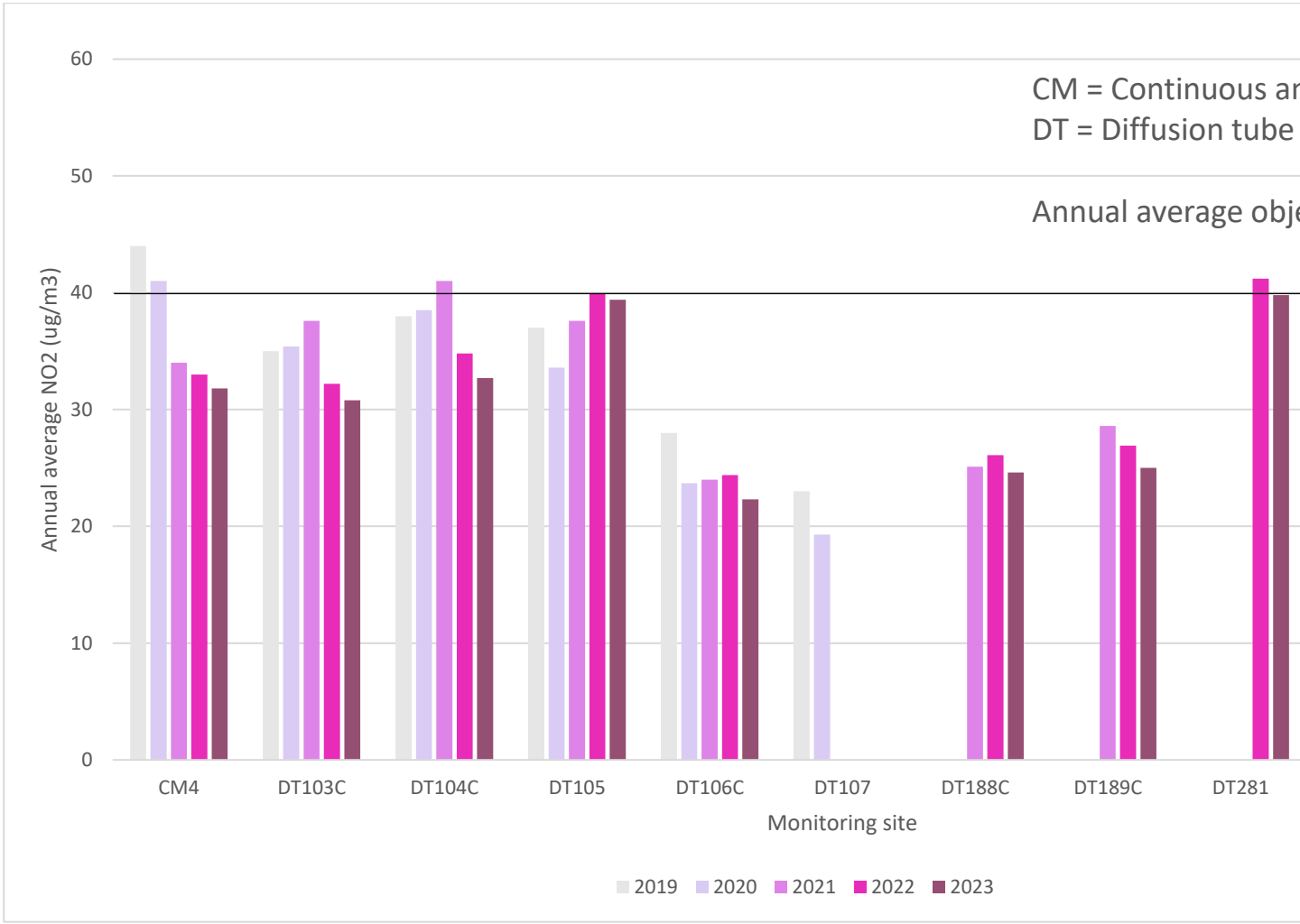

60
50
40
30
20
10
0
Annual average NO2 (ug/m3)
CM = Continuous ar
DT = Diffusion tube
Annual average obje
CM4
DT103C
DT104C
DT105
DT106C
DT107
DT188C
DT189C
DT281
Monitoring site
2019
2020
2021
2022
2023

Figure A.4: Trends in Annual Mean NO_2 Concentrations in Manningham Lane AQMA (order 2)

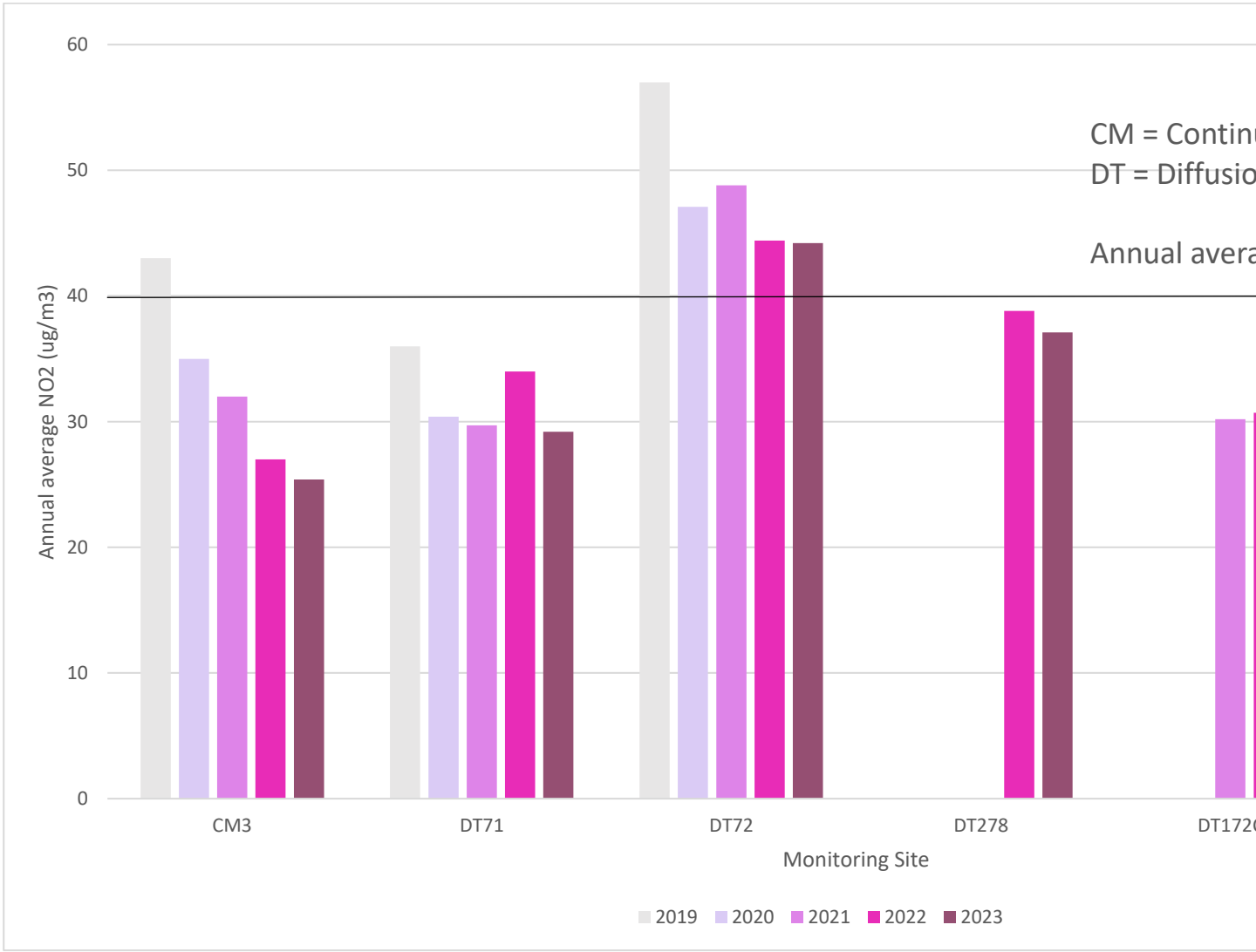


Figure A.5: Trends in Annual Mean NO_2 Concentrations in Thornton Road AQMA (order 3)

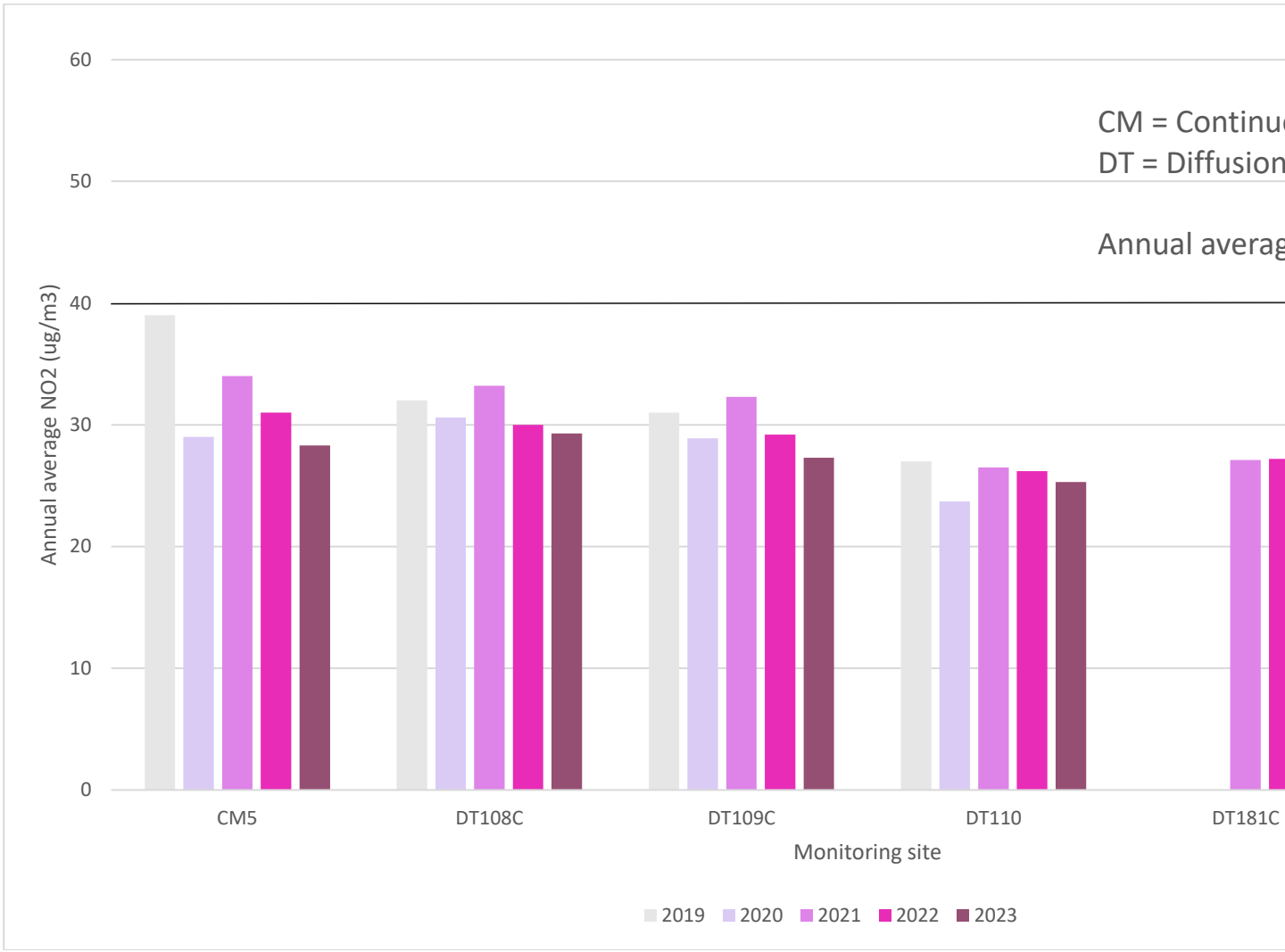


Figure A.6: Trends in Annual Mean NO_2 Concentrations in Shipley Airedale Road AQMA (order 4)

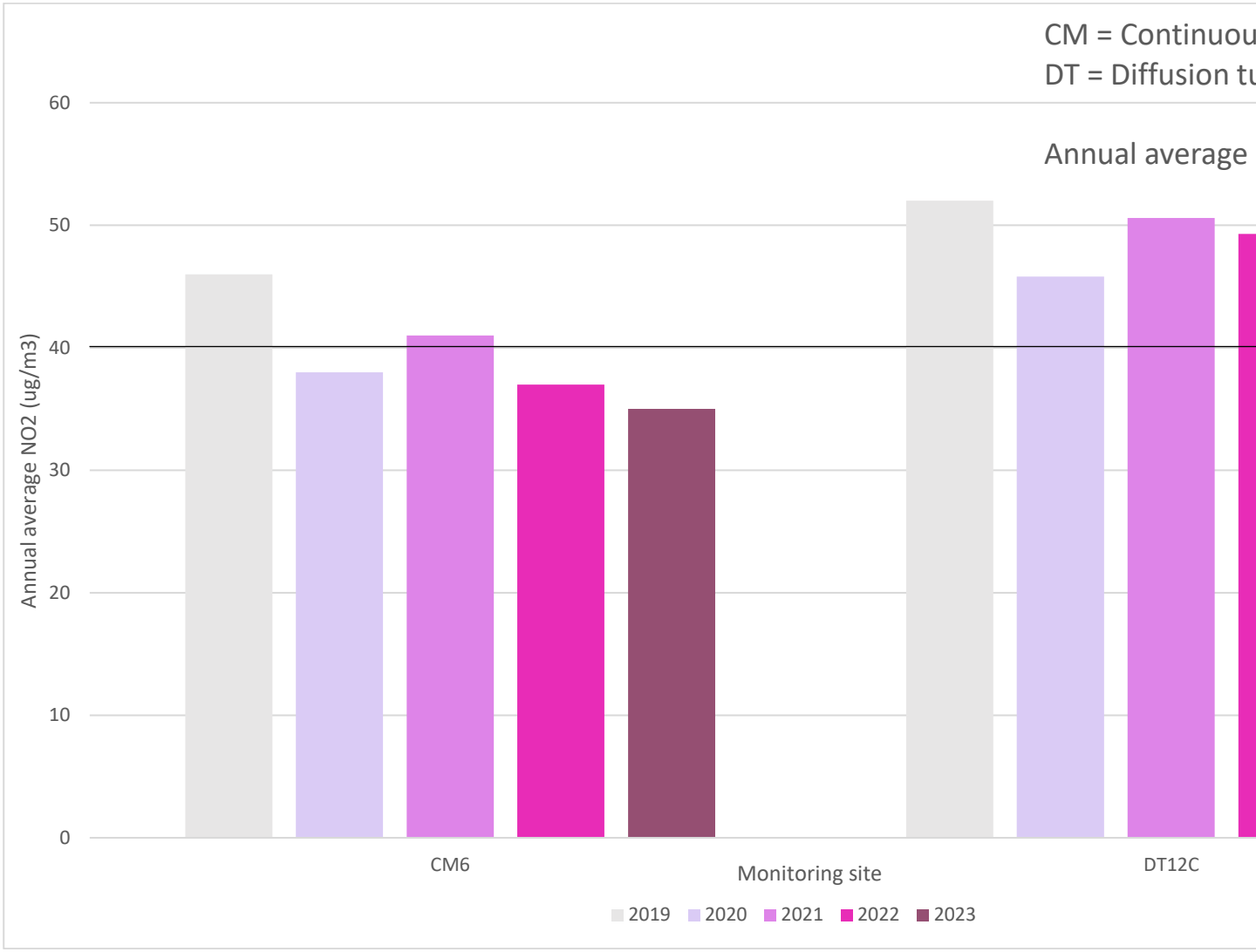


Figure A.7: Trends in Annual Mean NO_2 Concentrations around Harrogate Road / Killinghall junction

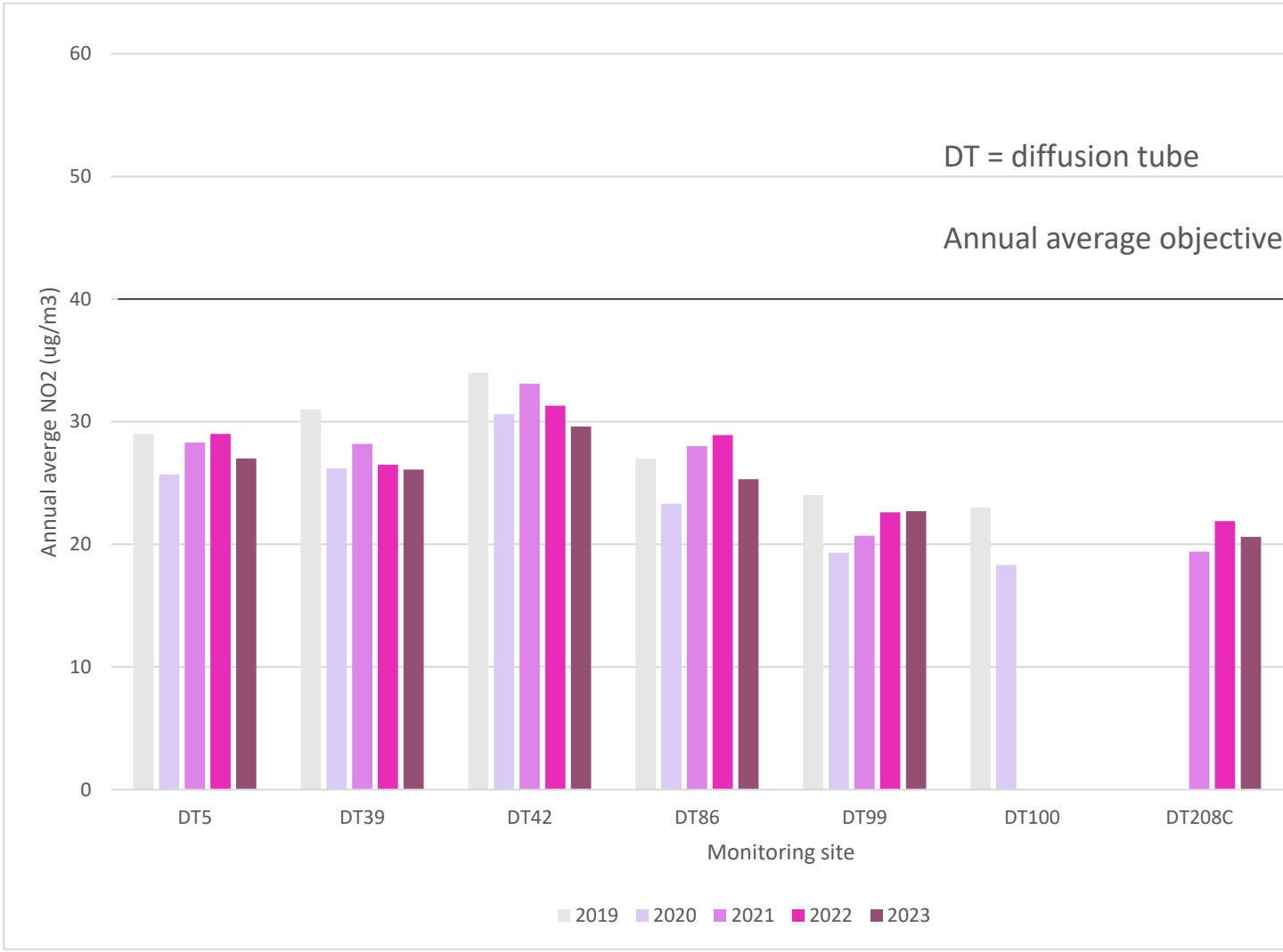


Figure A.8 Trends in Annual Mean NO_2 Concentrations around Saltaire Crossroads

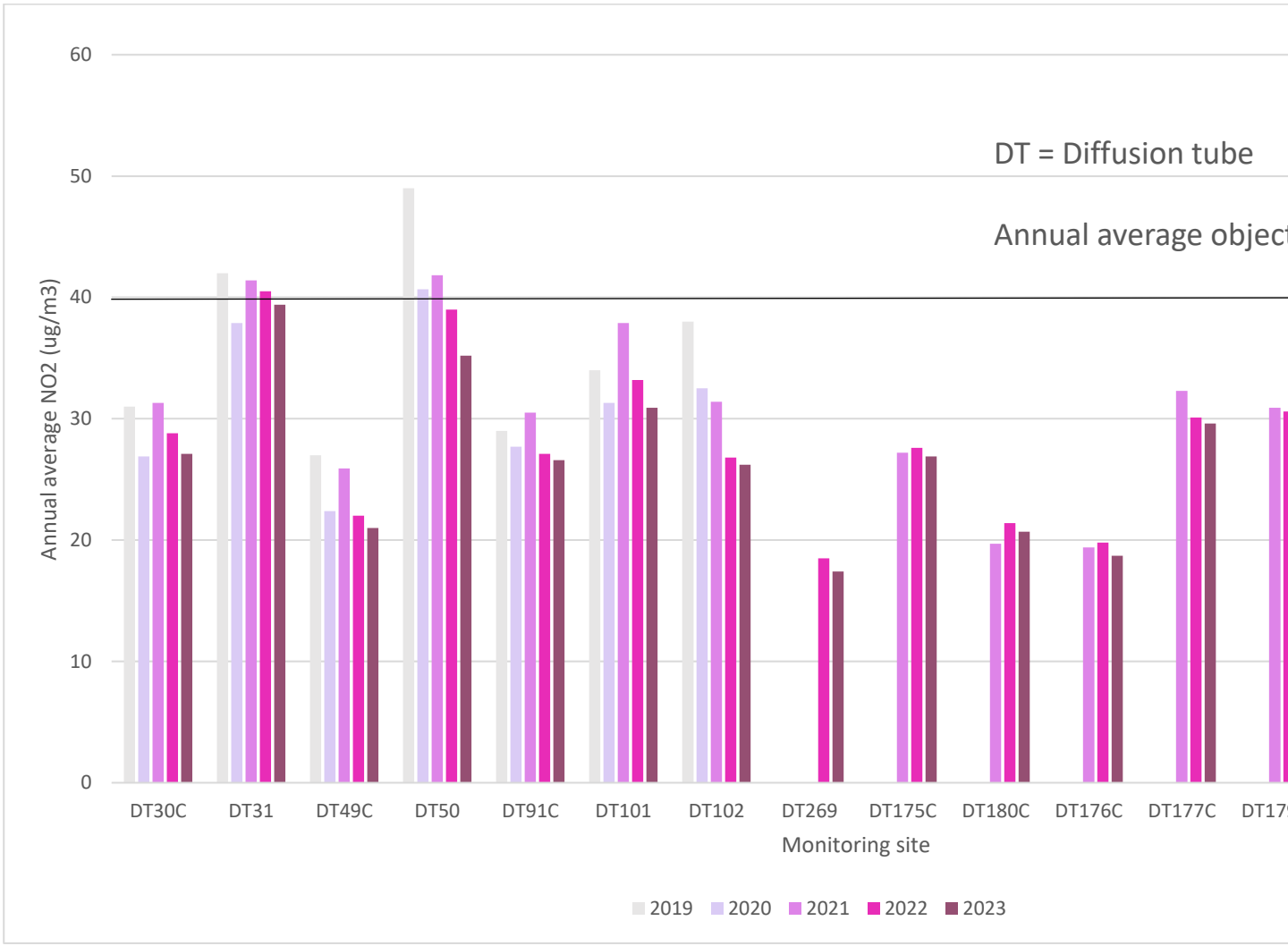


Figure A.9: Trends in Annual Mean NO_2 Concentrations around Rooley Lane and Tong Street (area of concern)

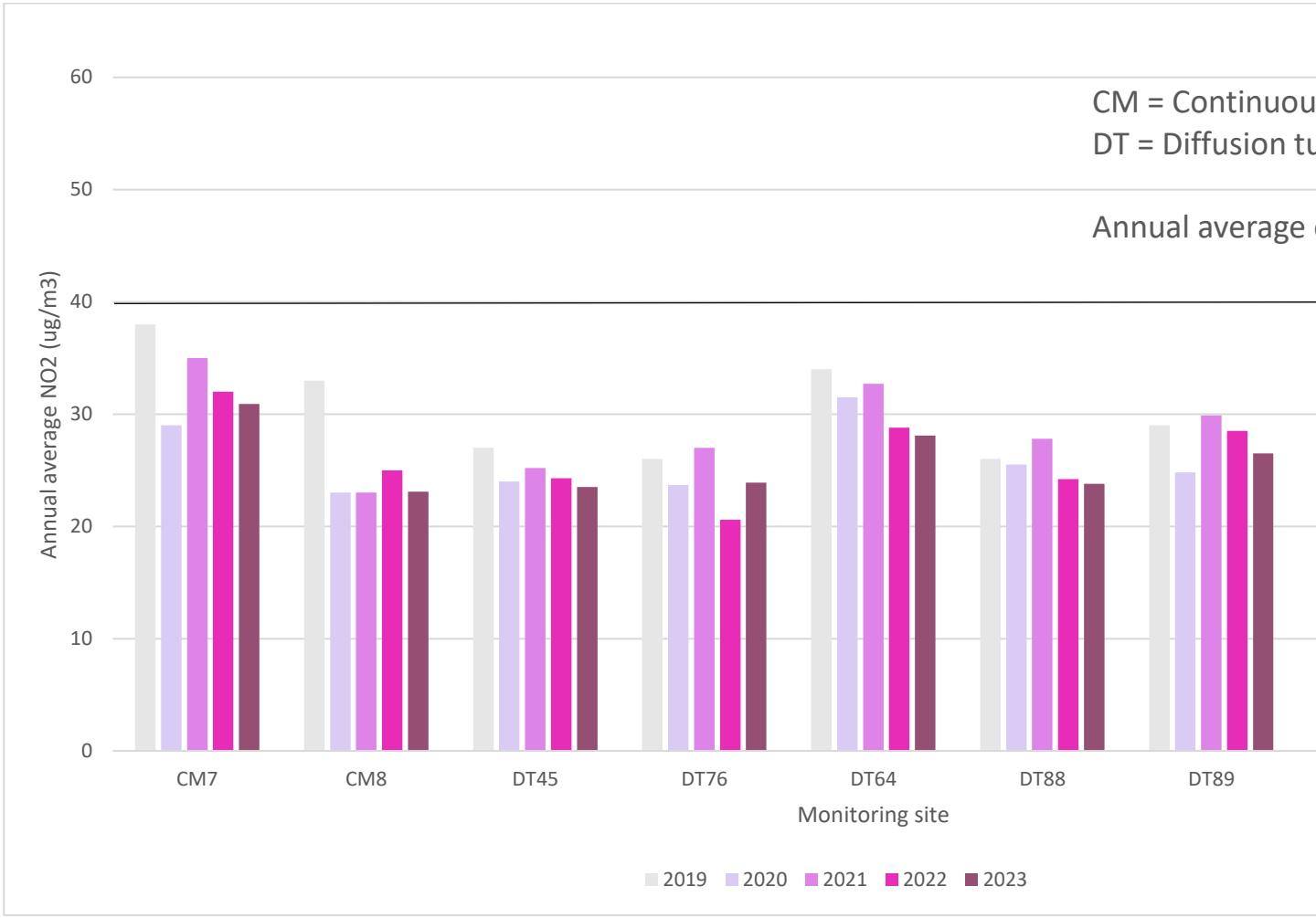


Figure A.10: Trends in Annual Mean NO_2 Concentrations around Canal Road (area of concern)

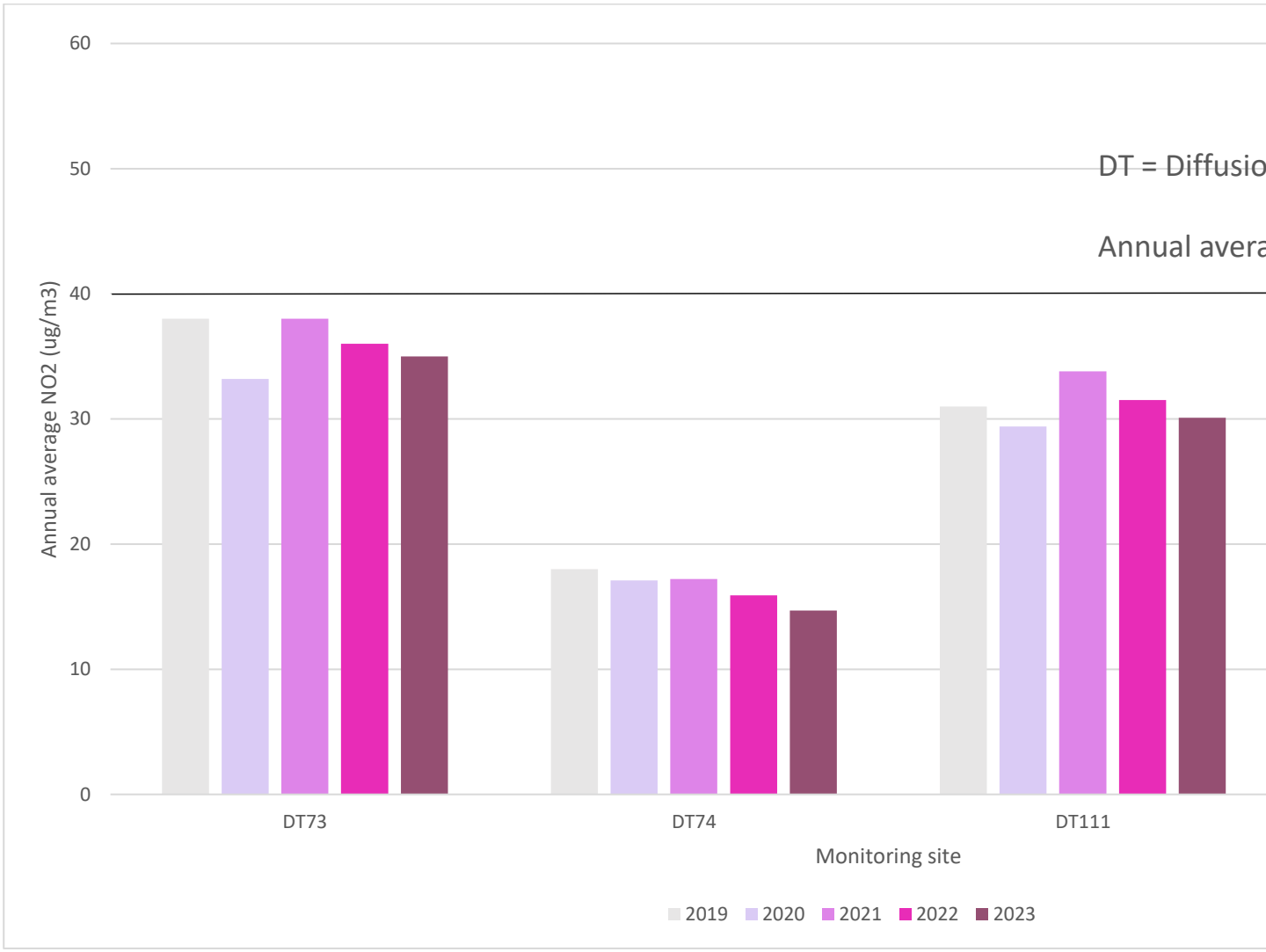


Figure A.11: Trends in Annual Mean NO_2 Concentrations around Greengates Crossroads

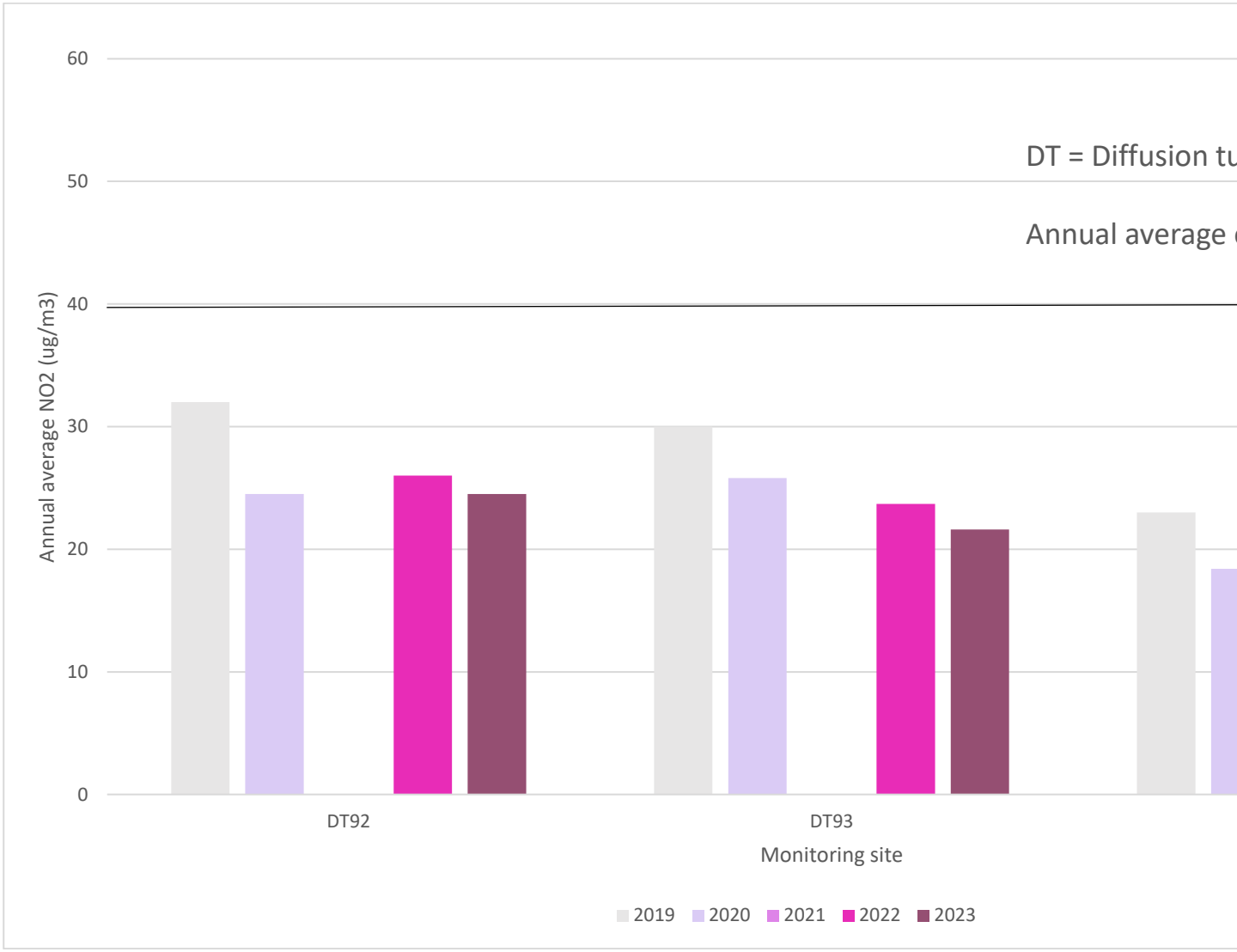


Figure A.12: Trends in Annual Mean NO_2 Concentrations at long term city centre sites

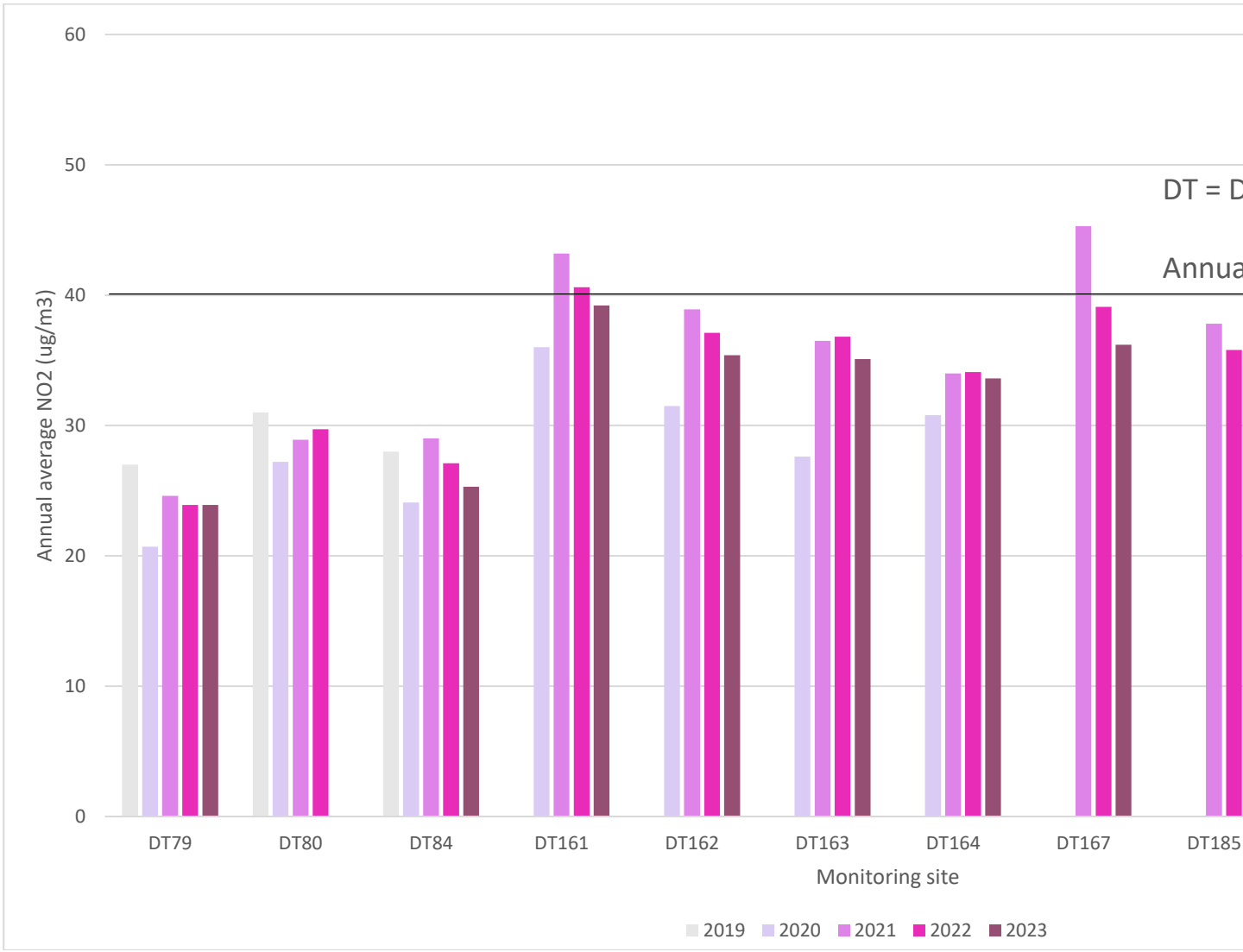


Figure A.13: Trends in Annual Mean NO_2 Concentrations around Parry Lane and Leeds Road

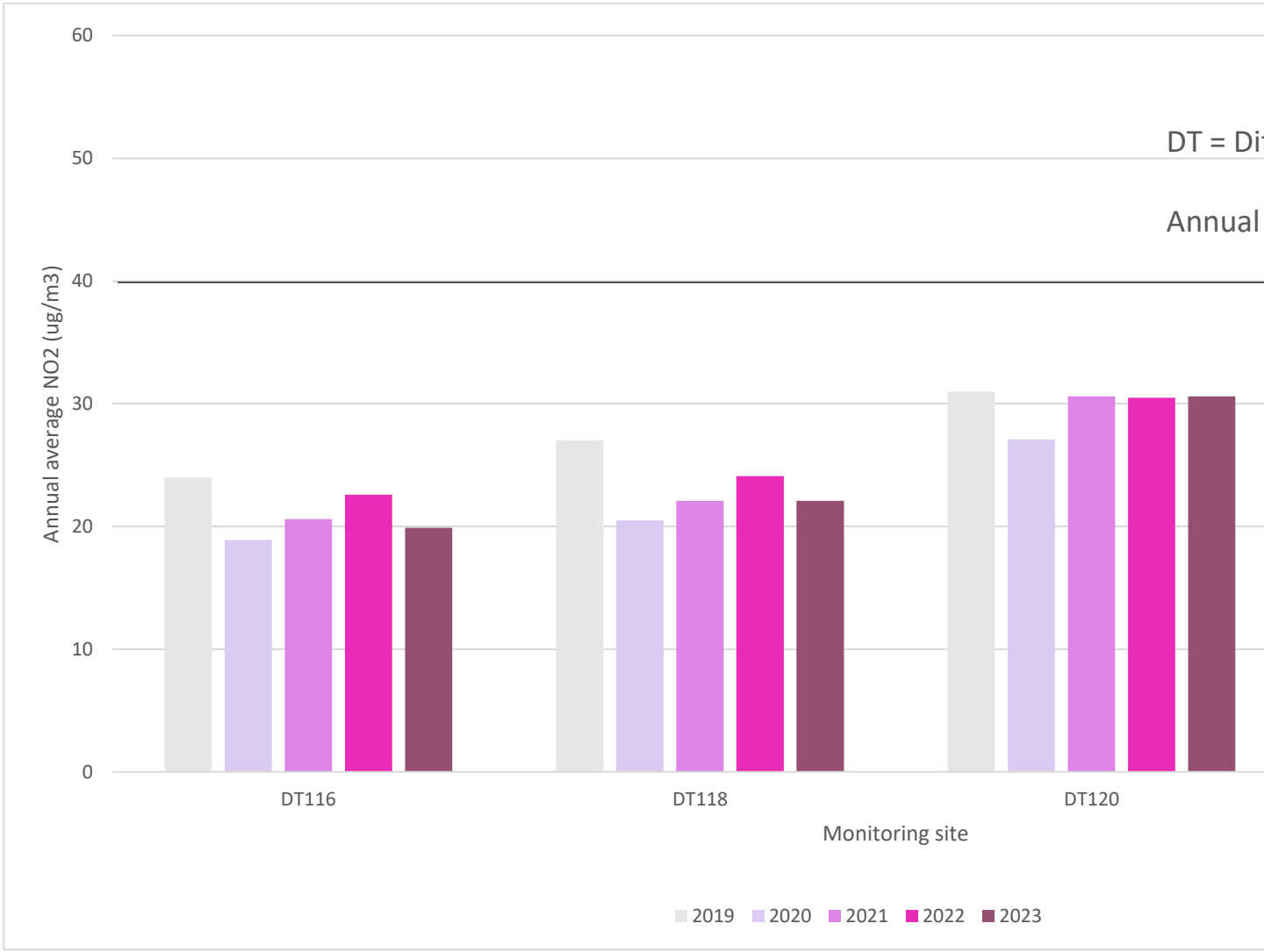


Figure A.14: Trends in Annual Mean NO_2 Concentrations at planning baseline sites

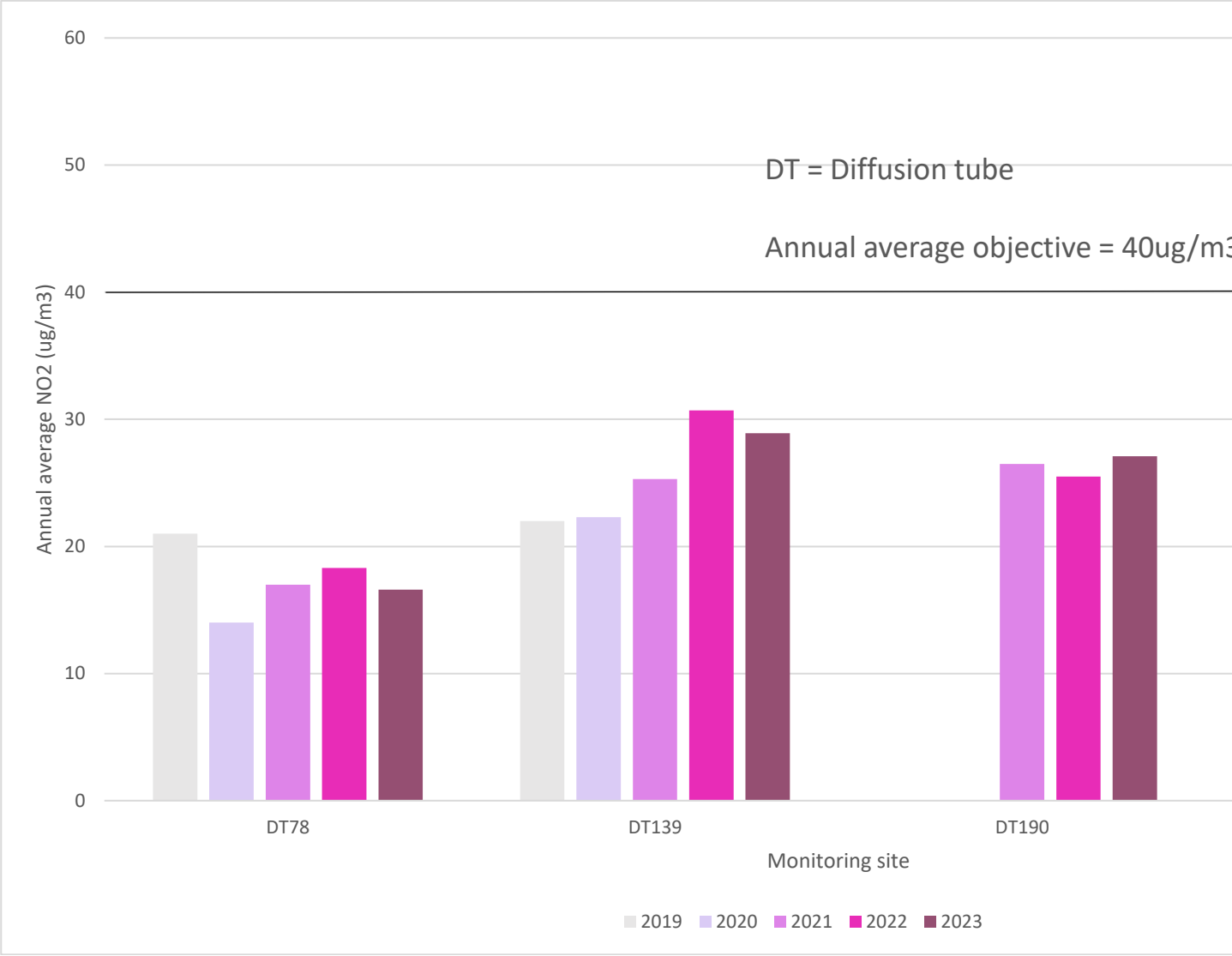


Table A.15 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

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
CM2	406058	441273	Urban Centre	full year	95	0	0
CM3	415582	434457	Roadside	full year	96.1	0	0
CM4	415933	430569	Roadside	full year	99.1	0	**0 (116.**
CM5	415870	433054	Roadside	full year	85.6	0	0
CM6	416974	433245	Roadside	full year	96.8	0	0
CM7	417860	430705	Roadside	full year	97.4	0	0
CM8	419188	430213	Roadside	full year	94.5	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%).

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.

During 2023 there were no exceedances of the hourly objective for nitrogen dioxide at any automatic monitoring sites in the Bradford District. There have been no recorded exceedances of the hourly objective at any of the Bradford automatic sites in the last 5 years. The last recorded exceedances of the hourly nitrogen dioxide objective in Bradford occurred in the Thornton Road (CM5) and Mayo Avenue (CM4) AQMAs during 2014.

Annual mean nitrogen dioxide concentrations of >60 µg/m^3 measured at a passive diffusion tube monitoring site can be indicative of exceedances of the hourly objective. The highest annual mean concentration recorded at a diffusion tube monitoring site in Bradford during 2023 was 47.8 µg/m^3 at site DT12 on Shipley Airedale Road. This site is in the Shipley Airedale Road AQMA very close to the continuous analyser (CM6). As the highest recorded diffusion tube measurement in 2022 was below 60µg/m^3 (adjacent to a continuous analyser which also showed no breaches of the hourly objective) it is unlikely that the hourly nitrogen dioxide objective was exceeded at any monitored location in the Bradford district during 2022.

As presented in Table A.3 (Appendix A) there were no exceedances of the annual mean nitrogen dioxide objective at any of Bradford's automatic monitoring sites during 2023.

There were three locations where passive diffusion tube monitoring returned an annual average concentration of greater the 40µg/m^3 as detailed in Table A.4 (Appendix A). These were:

- DT12 (47.8 µg/m^3): Treadwell Mills, Shipley Airedale Road (relevant location within AQMA 4)
- DT72 (44.2 µg/m^3): Queen's Road, Manningham (relevant location within AQMA 2)
- DT191 (42.0 µg/m^3): Low Mill Keighley (non-relevant location not in an AQMA or the CAZ)

With the exception of site DT191 (currently a non-relevant location monitored for planning purposes) all sites that exceeded the annual average nitrogen dioxide objective in 2022 are already within declared AQMAs and/or the CAZ. Where applicable the results from these sites have been distanced corrected to the nearest relevant receptor point (Table C.8). After distance correcting tube DT12 still showed an exceedance at the nearest relevant receptor point. A distance correction was not undertaken for site DT72 as this site is located close to a junction but is in line with a relevant receptor point further along the road. There are no relevant receptor points near site DT191.

Sites DT72 and DT12 have a long history of exceedance but are both showing long term improvement as shown on Figures A.4 and A.6.

Site DT191 is a kerbside side adjacent to the A6035 in Keighley where a planning proposal for an apartment block on the opposite side of the road was approved in July 2022 (21/00583/MAF). The tube is being used to assess air quality in the locality before and after the development takes place. The detailed air quality impact assessment submitted with the planning application indicated that concentrations at the front façade of the proposed homes would be within the air quality objectives by the anticipated scheme completion year. Monitoring being undertaken at the opposite side of the road (DT190) has confirmed this is already the case with an annual average concentration of 27.1µg/m^3 recorded at this site in 2023. An AQMA is not being declared at site DT191 as it is not a relevant location and there is currently no other relevant location within the vicinity of the site considered to be at risk of exceeding air quality objectives.

Within Bradford's four AQMAs there has been a general improvement in air quality since 2019 (Figures A.3 to A.6). During 2023 there were no exceedances of the NO_2 objectives in the Mayo Avenue AQMA (order 1) or the Thornton Road AQMA (order 3). The last exceedance of a NO_2 objective at relevant receptor points in these AQMAs occurred 5 years ago.

Site DT105 on Manchester Road (AQMA order 1) remains very close to exceeding the annual average air quality limit value for NO_2 at the monitoring location (39.4µg/m^3) but when corrected for distance to the nearest relevant receptor point the air quality objective level is met (35.2µg/m^3). This site is being investigated further following state 1 assessment[12] of the Bradford CAZ carried out by JAQU during 2023 which covered the period January 2023 to June 2023. During this period site DT105 had a bias corrected average value of 43.2µg/m^3 (not annualised). Air quality at site DT105 improved towards

[12] The process of state assessment is undertaken by the Government's Joint Air Quality Unit and assesses progress against meeting national air quality standards. Unlike the LAQM process undertaken by local authorities to establish AQMAs the state assessment has no regard for the presence of relevant receptor points. A roadside location will fail the state assessment if there is public access to a location even if members of the public spend very little time there. This is different to an AQMA which is only declared if members of the public regularly spend periods of time at a location that are comparable with the averaging time of the air quality objectives. The Bradford CAZ must remain in place until the state assessment is met and predicted to remain met with or without the CAZ in place. The first state 1 assessment of the Braford CAZ considered data for the period January 2023 to June 2023 only.

the end of 2023 and the site is currently considered by CBMDC to be compliant with both the national air quality objective and the air quality standard.

CBMDC intends to retain the AQMA at Mayo Avenue until all monitoring sites in the AQMA pass the CAZ state assessment. Revoking an AQMA in an area recently identified by JAQU as requiring further investigation would cause confusion at a local level and could jeopardise support and funding for further improvement measures. The next state assessment is due in 2025.

The AQMA at Thornton Road has complied with the air quality objectives since 2018 and would normally now be revoked. However, this area is currently undergoing a period of significant change. Pipes are being laid to serve the new energy centre site and traffic is severely congested due to ongoing works to pedestrianise and alter access to city centre roads. A new stretch of cycle lane is also being introduced. It is expected that pollutant concentrations recorded during 2024 will be higher than those seen in recent years. Once the works have been completed a short period of post scheme monitoring will be undertaken to check that the area remains in compliance under the revised road layout / traffic conditions. The Thornton Road AQMA will be revoked as soon as possible afterwards. The council considers it would be inappropriate to revoke the AQMA during a period of significant change at this site and under the current congested conditions in the area.

In the Manningham Lane AQMA (order 2) and Shipley Airedale Road AQMA (order 4) exceedances of the annual average nitrogen dioxide objective remained in 2023 as detailed above. These AQMAs will remain in place for a further year and monitoring will continue. A further update on concentrations in both these AQMAs will be provided in the 2025 ASR.

City of Bradford MDC is currently undertaking a detailed source apportionment of traffic emissions at all locations which remain in exceedance of the air quality limit values during JAQU's first state assessment of the CAZ. Likely compliance years under current conditions are also being assessed. Once this work is complete City of Bradford MDC will take direction from JAQU as to next steps required to bring forward compliance with the air qualiy limit values at all locations.

In previous ASR reports City of Bradford MDC has also reported on air quality conditions in the following additional areas:

- Harrogate Road / Killinghall junction

- Saltaire crossroads
- Rooley Lane / Tong Street
- Canal Road

These are locations where elevated concentrations of nitrogen dioxide have been measured in the past and have previously been considered at risk of exceeding national air quality objectives.

Figure A.7 (Appendix A) shows annual mean nitrogen dioxide concentrations at monitoring locations around the Harrogate Road / Killinghall Road junction for the period 2019 to 2023. The locations of the monitoring sites in this area are shown on Figure D.10. The last recorded exceedance of the annual average objective in this area was recorded in 2018 at site DT42. Since 2018 concentrations in this area have reduced at all sites and are currently not of concern. During 2023 most of the diffusion tubes in this area returned slightly lower concentrations than for 2022 and 2021 suggesting that air quality in this area continues to improve. All monitoring sites in this area now regularly return annual average concentrations that are well within the 40µg/m^3 objective level and are no longer of concern.

Figure A.8 (Appendix A) shows annual mean nitrogen dioxide concentrations at monitoring locations around Saltaire crossroads for the period 2019 to 2023. The locations of the monitoring sites in this area are shown on Figure D.11. During 2023 all monitoring sites in this area met the annual average air quality objective for the first time since monitoring began. Some sites showed a considerable improvement compared with previous years with an average improvement across the area of 1.35 µg/m^3. Monitoring around Saltaire crossroads will continue during 2024 and a further update on pollutant concentrations in this area provided in the 2025 ASR report.

Figure A.9 (Appendix A) shows annual mean nitrogen dioxide concentrations at monitoring locations around Rooley Lane and Tong Street for the period 2019 to 2023. The location of the monitoring sites in this area are shown on Figure D.13. The last recorded exceedance of the annual average objective in this area was in 2018 at site DT64 (Tong Street). Since 2019 concentrations at this site have fallen to well below the objective levels. All other sites in this area have been consistently below the annual objective level since 2019 and most have shown gradual improvement over this period. The exception is site DT76 on the junction of Rook Street and Tong Street which showed a slight increase during 2023 compared to 2022. The concentration measured at site DT76 in 2023 was similar to that seen before 2022 suggesting that levels in 2022 were lower than usual. The reason for

this is not clear. In general air quality across this area has continued to improve since 2019.

Figure A.10 presents NO_2 annual mean concentrations around the Canal Road area betweeen 2019 to 2023. The location of the monitoring sites in this area are shown on Figure D.12. There were no exceedances of the annual average nitrogen dioxide objective in this area in 2023. There has been an ongoing improvement in air quality in this area since 2019 with all the measured 2023 values being lower than those recorded in 2022.

In addition to the AQMAs and other areas of previous concern, City of Bradford MDC also undertakes air pollution monitoring around the city centre and at other locations which are considered likely to be impacted on by planning proposals or major highways works.

Figure A.11 (Appendix A) presents annual mean nitrogen dioxide concentrations around Greengates crossroads. The location of Greengates crossroads is shown in Figure D.3. Monitoring was undertaken in this area between 2016 and 2021 to measure baseline concentrations prior to a major junction improvement scheme. More information about the scheme is available here: Link to information about the Greengates crossroads highways improvement scheme on City of Bradford Council website. A full air quality impact assessment for the scheme was undertaken by consultants to accompany the planning application for the scheme and is available to view here: Link to Greengates crossroads planning application on City of Bradford MDC website

Following completion of the scheme in 2022 monitoring has been re-established and will be continued for a further 5 years to evaluate the local air quality impacts.

Prior to 2019 exceedances of the annual average NO_2 objective were measured in this area but since 2019 the situation has generally improved. Monitoring will be continued throughout 2024 and a further update provided in the 2025 ASR.

During the junction improvement works at Greengates crossroads traffic was significantly delayed in some locations and some diverted onto other routes. At the request of local residents additional monitoring was established in the area on Apperley Road (DT276) and further down Harrogate Road (DT275) to monitor this impact. Both sites returned results well within the objective level during 2023 (12.9µg/m^3 and 25.70µg/m^3 respectively) and are not of concern.

Figure A.12 presents NO_2 annual mean concentrations at monitoring locations around the city centre between 2019 and 2023. The location of these monitoring sites are shown in Figure D.14.

Only two sites (DT79 and DT84) have long term monitoring data. Both these sites have shown gradual improvement since 2019.

Site DT80 showed a slight increase in 2022 but no further data has been obtained during 2023 due to ongoing major works in the area. The site is located on Bridge Street which will become closed to through traffic after completion of the works. Air quality in the area is expected to improve as a result of the closure to through traffic. Further post scheme monitoring will be undertaken if possible.

Godwin Street was identified as being at high risk of exceeding the annual mean objective during the development of the business case for the CAZ. Four triplicate monitoring sites (DT161, DT162, DT163 and DT164) were therefore established on Godwin Street in 2020.

Site DT161 slightly exceeded the 40µg/m^3 objective level in 2021 and 2022 but measured a concentration within the 40µg/m^3 objecitve level in 2023 (39.2µg/m^3). All other monitoring sites on Godwin Street also showed improvement during 2023. This improvement may in part be due to the introduction of the CAZ but will also have been influenced by roadworks that took place in the Godwin Street area during autumn 2023. These roadworks resulted in Godwin street being reduced from three lanes to two and the right turn into Sunbridge Road been removed. Details of the scheme are available here Information on Godwin Street changes on CBMDC website. Monitoring is continuing on Godwin Street to assess the long term impacts of the CAZ and the road layout changes in this area.

Air quality montoring was introduced onto Market Street in 2021 due to concerns raised by local residents about bus and taxi emissions in the area. During the first year of monitoring the NO_2 annual average air quality objective was exceeded at site DT167 (a roadside location outside the residential building). Data from 2022 and 2023 shows considerable air quality improvement at site DT167 since the introduction of the CAZ. Between 2021 and 2023 there was a 9.1µg/m^3 reduction in the annual average nitrogen dioxide concentration at DT167 and a 4.8µg/m^3 reduction at site DT185 located on the residential building facade. At the current time Market Street is inaccessible to all vehicles due to major roadworks to change Market Street into a pedestrain street. It is anticipated that air quality on Market Street will improve considerably more once all vehicles are removed from the area.

Other new sites established on Sunbridge Road in 2021 have shown no exceedances of the air quality objeicitves to date but are approaching 40µg/m^3. One of these sites DT183

showed a slight increase in the annual average NO_2 concentration during 2023. This increase is thought to be related to congestion that arose during the roadworks that took place in the area during autumn / winter 2023/2024. These works have resulted in Sunbridge Road now becoming a no through road with addition of a turning circle at the junction with Tyrell Street. It is anticipated that traffic levels will be reduced as a result of the new road layout and that the 2024 data may show some improvement.

Due to the amount of change that has taken place to the city centre road network during 2023 (and continuing into 2024) trend data from the city centre monitoring sites in recent years needs to be treated with caution. Monitoring will be continued where possible to evaluate the impact of these changes and to identify any other areas that have experienced significant changes in traffic levels / types as a result of the works. Additional monitoring has already been establised in some areas where buses have been relocated to.

Figure A.13 (Appendix A) presents annual mean nitrogen dioxide concentrations around the Parry Lane area of the district for the period 2019 to 2023. Baseline monitoring in this area was initially commenced in 2016 in response to plans for a large diesel operated Short Term Operating Reserve (STOR) in the area. The location of Parry Lane is shown in Figure D.3. There have been no exceedances of the annual average objective at these locations since monitoring began and levels have generally improved or stayed static over the 2019 to 2023 period. To date the STOR has not been developed but other changes are taking place in this area including the introduction of a new business park / fast food restaurant. The area includes the proposed site of the recently approved hydrogen testbed which will include a hydrogen production and refuelling facility. Current concentrations in this area are well below the 40µg/m^3 objective. Monitoring will continue in this area during 2024 and a further update will be provided in the 2025 ASR report, including progress on the hydrogen testbed facility.

Figure A.14 (Appendix A) presents annual mean nitrogen dioxide concentrations at other planning baseline sites around the district for the period 2019 to 2023. These sites have been established to monitor baseline conditions prior to implementation of new developments. The location of these sites are available in the GIS tool.

Site DT139 is close to a new secondary school on Thornton Road as shown on Figure D.4. The site was fully developed during 2020/2021 with the school opening in November 2021. The baseline monitoring was established in 2016 when the council became aware of proposals for a new school on this site which is adjacent to a busy main road. The

monitoring helped to inform the exposure assessment undertaken for the site and influenced the final layout of the site which was redesigned to reduce the childrens exposure to air pollution, following advice from the air quality team. Further information about the air quality assessment in relation to this school can be found here: Link to Eden School planning application on City of Bradford MDC website. The 2023 concentration measured at this site was 28.9µg/m^3. This is higher than the levels recorded before the development of the school site but is lower than the value recorded in 2022 and remains well within the annual average objective level. The magnitude of change at this site between 2021 and 2023 is higher than that seen at many other sites across the city and may be in part due to the introduction of the school and additional traffic associated with it.

Site DT78 is located on Aireworth Road and is providing base line monitoring prior to the introduction of an approved Energy from Waste (EfW). The site has not yet been fully developed but monitoring is being continued to inform the CAZ evaluation and to ensure recent data is available should the EfW progress. Concentrations in this location are currently well below the 40 µg/m^3 objective level and have decreased slightly since 2019.

During 2023 a large amount of other monitoring was collected from around the district to assist with the longer term evaluation of the CAZ. These results have been included in this report for completeness but have not been subject to a detailed analysis for the purpose of this report as the CAZ evaluation is a separate process to annual LAQM reporting and has to be undertaken against EU limit values not air quality objectives.

Only two AQMAs, Manningham Lane (order 2) and Shipley Airedale Road (order 4) have ongoing breaches of the air quality objectives. Air quality in both these areas is showing signs of continous improvement and in the case of Manningham Lane there are already large scale plans in place to improve air quality further.

It is anticipated introduction of the CAZ will lead to the revocation of all AQMAs and achievement of compliance with air quality limit values across all sites in Bradford

All monitoring undertaken in 2023 has been continued into 2024 and will be reported on again in the 2025 ASR report.

3.2.2 Particulate Matter (PM_{10})

Table A.16 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.

All reported PM10 data has been independently verified and ratified by Air Quality Data Management Services (www.aqdm.co.uk) on behalf of City of Bradford MDC.

There have been no exceedances of the annual mean or 24 hour PM10 objectives in Bradford since 2016. During 2023 the annual average concentration of PM10 measured at the roadside site inside the CAZ (CM6) fell from 17 µg/m^3 to 16.4µg/m^3. Levels were also lower at the Keighley urban centre (CM2) falling from 13 µg/m^3 to 12.22µg/m^3. Levels at the roadside site on Tong Street increased very slightly from 14.0 µg/m^3 to 14.4 µg/m^3. 2023 had less days when the daily average exceeded 50ug/m^3 than in 2022. The maximum number of daily exceedances of 50 µg/m^3 in 2023 was 3 at site CM6. This is well below the 18 exceedances per annum allowed by the PM10 objective.

Across all measured sites annual average PM10 concentrations have fallen since 2019 but the post covid-19 trend is still not yet clear.

PM10 monitoring is on-going at all the continuous monitoring sites CM2 (Keighley), CM6 (Shipley Airedale Road) and CM8 (Tong Street). Further results from thee sites will be provided in the 2024 ASR report.

An additional AURN PM2.5 monitoring site is expected to be established at a suburban background site in Bradford during 2024. Results from this new site will be included in future ASR reports.

In October 2021 CBMDC successfully applied for an Air Quality Grant to develop a Particulate Reduction Strategy. As part of this programme 12 additional low cost analysers (Zephyrs) were procured and deployed around the district from June 2023 onwards. The analysers have been placed mainly in housing areas with some being targeted specifically at areas where significant levels of domestic smoke emissions are known to be occuring. The units have MCERTS certification for PM2.5 measurements. Results from the units are subject to independent verification by the council's current data management contractor (AQDS) and results are made available here Link to UK airquality.net website .

Figure D.17 in Appendix D shows the current location of the low cost sensor network. Results for the first 6 months of monitoring are given in Table A.9 Appendix A. Between June and December 2023, the average PM10 concentrations recorded at the low cost

sensor sites varied between 8.2µg/m^3 at Silsden and Ilkley and 11.4µg/m^3 at Apperley Bridge. The site at Apperley Bridge is located close to a canal marina and is likely to be influenced by solid fuel burning activities on canal boats. The site at Keighley air pollution station returned a value of 10.7µg/m^3 (for the 6-month period June 2023 to December 2023) compared with the value of 12.2 µg/m^3 measured at the co-located real time site over the whole year.

The Zephyr data is indicative monitoring that has not been annualised. It is not suitable for direct comparison with air quality objectives and is provided in this report for information only.

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.

Figure A.17 in Appendix A shows the trends in annual mean PM2.5 concentrations.

All PM2.5 data has been verified and ratified by Air Quality Data Management Services (www.aqdm.co.uk) on behalf of City of Bradford MDC.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 require that in England by the end of 2040:

- An annual average of 10 µg/m^3 for PM2.5 is not exceeded at any monitoring station.
- Population exposure to PM2.5 is at least 35% less than in 2018 (at urban and some suburban background sites).

PM2.5 concentrations measured in Bradford in 2023 were lower than those measured at all sites in 2022. At the roadside site in the CAZ (CM6) the concentration fell from 9.0 to 8.4µg/m^3. At the roadside site on Tong Street (CM8) the concentration fell from 8.0 to 7.1 µg/m^3. At Keighley the concentration decreased from 9.0µg/m^3 to 7.7µg/m^3. At all sites the annual average PM2.5 concentration was below 10 µg/m^3. Between 2019 and 2023 the annual average concentration at the urban centre site in Keighley (CM2) reduced by 23%. Further reductions will be needed to achieve the long-term population exposure target in Bradford.

In October 2021 CBMDC successfully applied for an Air Quality Grant to develop a Particulate Reduction Strategy. As part of this programme 12 additional low cost

analysers (Zephyrs) were procured and deployed around the district from June 2023 onwards. The analysers have been placed mainly in housing areas with some being targeted specifically at areas where significant levels of domestic smoke emissions are known to be occuring. The units have MCERTS certification for PM2.5 measurements. Results from these units are subject to independent verification by the council's current data management contractor (AQDS) and results are made available here Link to UK airquality.net website .

Figure D.17 in Appendix D shows the current location of the low-cost sensor network. Results for the first 6 months of monitoring are given in Table A.10 Appendix A. Between June and December 2023, the average PM2.5 concentrations recorded at the low-cost sensor sites varied between 4.7ug/m^3 at Silsden and 7.4ug/m^3 at Apperley Bridge. The site at Apperley Bridge is located close to a canal marina and is likely to be influenced by solid fuel burning activities on canal boats. The site at Low Moor is located close to a large industrial site and is likely to be impacted on emissions from that site. The site at Keighley air pollution station returned a value of 6.8µg/m^3 (for the 6 month period June 2023 to December 2023) compared with the value of 7.7µg/m^3 measured at the co-located real time site over the whole year.

The Zephyr data is indicative monitoring that has not been annualised. It is not suitable for direct comparison with air quality objectives and is provided in this report for information only.

3.2.4 Sulphur Dioxide (SO_2)

CBMDC no longer undertake sulphur dioxide monitoring.

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)
CM2	Keighley	Urban Centre	406058	441273	NO_2; PM10 PM2.5	NO	Chemiluminescent	n/a	5	2.7
CM3	Manningham Lane	Roadside	415582	434457	NO_2	YES, AQMA order 2, CAZ	Chemiluminescent	4	1.5	1.5
CM4	Manchester Road / Mayo Avenue	Roadside	415933	430569	NO_2	YES, AQMA order 1, CAZ	Chemiluminescent	2	2	1.5
CM5	Thornton Road	Roadside	415870	433054	NO_2	YES, AQMA order 3, CAZ	Chemiluminescent	0	2	1.5
CM6	Shipley Airedale Road	Roadside	416974	433245	NO_2; PM10 PM2.5	YES, AQMA order 4, CAZ	Chemiluminescent	2	2	2.7
CM7	Rook Lane	Roadside	417860	430705	NO_2	NO, CAZ	Chemiluminescent	1	1.5	1.5
CM8	Tong Street	Roadside	419188	430213	NO_2; PM10 PM2.5	NO, CAZ	Chemiluminescent	0	5.8	2.7

Notes:

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)
DT168	Rockhill Lane LP22 near M606	Suburban	417033	429293	NO_2	No	13.0	17.0	No	2.5
DT198	LP128 Rooley Lane/Gardiner Row	Roadside	417930	430975	NO_2	CAZ	0.4	2.6	No	3.0
DT197	LP 116 outside Rooley Medical Centre	Roadside	417846	430739	NO_2	CAZ	-	2.6	No	2.8
DT196	LP74 Rooley Lane opposite Toby Carvery	Roadside	417369	430370	NO_2	CAZ	5.9	2.4	No	2.5
DT195	LP60 opposite DT194, Rooley Lane	Roadside	417178	430344	NO_2	CAZ	-	2.7	No	2.4
DT194	LP61 Rooley Lane	Roadside	417184	430315	NO_2	CAZ	11.0	4.0	No	2.5
DT76	post 12 junc Rook Ln/Tong St	Kerbside	418268	430732	NO_2	CAZ	5.5	0.6	No	2.5
DT45	Rook Lane lampost 17	Roadside	417877	430717	NO_2	CAZ	5.0	1.5	No	2.5
DT214A DT214B DT214C	Post outside 221 Bierley Lane nr junction with Rockhill Lane	Roadside	417715	429299	NO_2	No	11.5	1.7	No	2.5
DT215A DT215B DT215C	Post corner of Sheldon Ridge	Roadside	417708	429380	NO_2	No	5.5	1.6	No	2.4

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)
DT216A DT216B DT216C	Post 2 Shetcliffe Lane outside house 17	Roadside	418853	430309	NO_2	No	3.7	1.3	No	2.5
DT217A DT217B DT217C	Post 3 Shetcliffe Lane outside house 28	Roadside	418829	430288	NO_2	No	4.5	1.6	No	2.5
DT88	Tong Street lamp post no 18	Roadside	418829	430399	NO_2	No	0.5	2.4	No	2.3
DT89A DT89B DT89C	Tong St/Broadstone Way Car Park	Roadside	419188	430213	NO_2	No	5.0	3.9	No	2.4
DT199A DT199B DT199C	Tong Street LP 202 opposite DT89	Roadside	419178	430193	NO_2	No	-	3.5	No	2.8
DT64A DT64B DT64C	Tong Street	Roadside	419342	430114	NO_2	No	0.5	2.9	No	2.5
DT200A DT200B DT200C	Tong Street opposite DT200 near KFC	Roadside	419328	430099	NO_2	No	-	2.2	No	2.5
DT220A DT220B DT220C	Broadstone Way LP2 near junction with Tyersal Lane	Roadside	419215	431809	NO_2	No	6.7	1.7	No	2.5
DT221A DT221B DT221C	Broadstone Way LP3 near junction with Tyersal Lane	Roadside	419196	431834	NO_2	No	3.6	4.2	No	2.5
DT222A DT222B DT222C	LP on Wakefield Road near Busfield	Roadside	417861	431486	NO_2	CAZ	30.0	5.3	No	2.4

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)
DT223A DT223B DT223C	LP64 Wakefiled Road outside house no.705	Roadside	417862	431536	NO_2	CAZ	3.0	2.0	No	2.5
DT218A DT218B DT218C	Near house 567 Sticker Lane LP 78&067	Roadside	418292	431290	NO_2	CAZ	14.5	2.0	No	2.5
DT219A DT219B DT219C	Near house 528 Sticker Lane LP 76&666	Roadside	418303	431328	NO_2	CAZ	13.0	2.6	No	2.4
DT116	Sticker Lane lp41	Roadside	418564	432218	NO_2	CAZ	1.0	2.6	No	2.6
DT118	Fearnville Drive lp1	Roadside	418666	432470	NO_2	No	15.0	1.3	No	2.6
DT201	Bowling Back Lane / Parry Lane LP35 outside house 250	Roadside	418108	432322	NO_2	CAZ	0.0	1.8	No	2.5
DT202	Parry Lane LP2	Roadside	418135	432272	NO_2	CAZ	-	2.2	No	2.5
DT203	LP 43 Bowling Back Lane opposite entrance to recycling centre	Roadside	418345	432366	NO_2	CAZ	-	1.3	No	2.5
DT160A DT160B DT160C	Laisterdyke	Roadside	418644	432898	NO_2	CAZ	0.0	2.3	No	2.4
DT204A DT204B DT204C	Laisterdyke LP9 opp DT119	Roadside	418640	432870	NO_2	CAZ	-	3.0	No	2.4

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)
DT120A DT120B DT120C	Leeds Rd St Marys School	Roadside	417991	432926	NO_2	CAZ	0.0	6.6	No	2.5
DT209A DT209B DT209C	LP57 Leeds Road opposite Steadman Terrace and 120	Roadside	417960	432907	NO_2	CAZ	-	5.0	No	2.6
DT205	LP6 Killinghall Road across from house no. 17	Roadside	418597	433111	NO_2	CAZ	13.0	3.3	No	2.2
DT206	LP5 Killinghall Road outside house no. 17 opp DT205	Roadside	418579	433109	NO_2	CAZ	2.0	2.7	No	2.4
DT233	LP 23 Killinghall Rd nr house 105 and pharmacy near Ellerton Street	Roadside	418546	433430	NO_2	CAZ	1.5	3.5	No	2.5
DT232	LP24 outside 78 Killinghall Road	Roadside	418563	433432	NO_2	CAZ	15.5	3.1	No	2.4
DT230A DT230B DT230C	Post 18 Gain Lane near house 48 opp Morrisons HQ	Roadside	418784	434409	NO_2	No	11.5	3.7	No	2.4
DT231A DT231B DT231C	Post 17 Gain Lane opp house 48 outside Morrisons HQ	Roadside	418791	434424	NO_2	No	-	3.6	No	2.4

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)
DT5	Harrogate Road (furthest from crossroads)	Roadside	417982	434886	NO_2	No	0.0	1.3	No	2.7
DT39A DT39B DT39C	Harrogate Road (nearest crossroads)	Roadside	417927	434799	NO_2	No	2.0	1.2	No	2.3
DT208A DT208B DT208C	Harrogate Road opposite DT5	Roadside	417966	434884	NO_2	No	5.0	1.4	No	2.4
DT99	Charnwood Grove/Harrogate Rd LP below junc	Roadside	418033	434970	NO_2	No	17.0	1.8	No	2.7
DT86	Otley Rd lamp post no 2	Roadside	417894	434753	NO_2	No	0.0	2.5	No	2.5
DT42A DT42B DT42C	Killinghall	Roadside	417902	434751	NO_2	No	1.5	1.4	No	2.2
DT207A DT207B DT207C	Killinghall Road opp DT42	Roadside	417912	434759	NO_2	No	0.3	3.9	No	2.4
DT228A DT228B DT228C	LP80 Killinghall Rd between Fagley Road and Nothcote Road	Roadside	418090	434429	NO_2	CAZ	3.5	2.9	No	2.5
DT229A DT229B DT229C	LP83 Killinghall Road between Fagley Road and Northcote Road	Roadside	418059	434509	NO_2	CAZ	0.2	2.2	No	2.5
DT92	Harrogate Rd	Roadside	419006	437217	NO_2	No	-	2.0	No	2.2

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)
DT93	New Line (former school)	Roadside	419003	437308	NO_2	No	-	1.3	No	2.6
DT286	Lp at the end of Stockhill Road at junction with Harrogate Road	Roadside	419103	437334	NO_2	No	0.0	2.6	No	2.6
DT94	Stockhill Rd (school)	Roadside	419076	437345	NO_2	No	0.0	1.1	No	
DT273	New Line, Greengates on LP across from ASDA & Bank	Roadside	419138	437213	NO_2	No	9.5	3.0	No	2.5
DT274	LP on Greengates X Roads	Roadside	419107	437314	NO_2	No	-	3.5	No	2.5
DT275	on LP across from 138 Harrogate Road (Binns Hearing)	Roadside	419317	437551	NO_2	No	-	4.0	No	2.7
DT276	Apperley Road (Canal Bridge) outside Apperley Cottage LP 29	Kerbside	418979	437969	NO_2	No	2.7	0.2	No	2.5
DT305	LP outside Cavendish Primary	Suburban	418640	436130	NO_2	No	11.5	1.3	No	2.8
DT306	LP outside Cavendish Primary, Hall Lane Enterance	Suburban	418567	436068	NO_2	No	19.5	1.5	No	2.6

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)
DT307	Cavendish primary 3rd site	Suburban	418476	436067	NO_2	No	6.5	1.4	No	2.6
DT272	Barkerend Road - Traffic Light sign outside house no 293	Roadside	417661	433528	NO_2	CAZ	11.0	6.7	No	2.5
DT224A DT224B DT224C	Barkerend Road LP24 opp Discovery House	Roadside	417117	433431	NO_2	CAZ	-	5.0	No	2.3
DT225A DT225B DT225C	Barkerend Road outside alterations shop	Kerbside	417087	433444	NO_2	CAZ	-	0.5	No	2.3
DT227A DT227B DT227C	Otley Road LP 50 next to house 234	Roadside	417054	434165	NO_2	CAZ	0.0	3.8	No	2.4
DT123A	Otley Rd/SunnyBank	Roadside	414766	437113	NO_2	CAZ	20.0	1.4	No	2.5
DT123	lp5 Otley Rd CE School	Kerbside	414660	436974	NO_2	CAZ	7.8	0.5	No	2.4
DT124	lp4 Otley Rd terrace props	Roadside	414620	436924	NO_2	CAZ	6.3	2.4	No	2.4
DT121	lp40 Bradford Rd nr Branch	Roadside	414546	436933	NO_2	CAZ	7.1	2.6	No	2.4
DT122	lp33 Bradford Rd nr Branch	Roadside	414567	436811	NO_2	CAZ	8.0	2.3	No	2.2
DT126	Bradford Rd pelican crossing	Kerbside	414643	436505	NO_2	CAZ	11.0	0.6	No	2.2
DT125	lp20 165 Otley Rd	Roadside	414674	436471	NO_2	CAZ	8.3	2.5	No	2.6

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)
DT127	lp36 Keighley Rd	Roadside	415044	435558	NO_2	CAZ	10.4	0.4	No	2.5
DT128	lp11 Frizley Gardens	Urban Background	415331	435796	NO_2	CAZ	0.0	96.0	No	2.5
DT130	lp1 Midland Road	Roadside	415839	434674	NO_2	CAZ	3.0	3.4	No	2.4
DT132	LP136 Manningham Lane	Roadside	415717	434265	NO_2	CAZ	3.5	1.1	No	2.3
DT301	LP 5 Green Lane	Urban Background	415429	434016	NO_2	CAZ	5.5	2.1	No	2.5
DT302	LP 3 Green Lane	Urban Background	415483	434048	NO_2	CAZ	10.5	2.7	No	2.5
DT303	LP 7 Green Lane	Urban Background	415337	434016	NO_2	CAZ	7.5	1.8	No	2.7
DT304	LP 4 Green Lane	Urban Background	415447	434047	NO_2	CAZ	12.0	2.0	No	2.4
DT71A DT71B DT71C	LP53 Manningham Lane adj real time monitoring site	Roadside	415580	434461	NO_2	Yes, AQMA 2,CAZ	8.3	2.6	No	2.5
DT278	LP 46 Manningham Lane near DT71	Roadside	415570	434477	NO_2	Yes, AQMA 2,CAZ	7.0	2.0	No	2.1
DT172A DT172B DT172C	LP47 junction of Maninngham Ln and Springbank Ln opp DT71	Roadside	415590	434478	NO_2	Yes, AQMA 2,CAZ	12.0	2.5	No	2.5

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)
DT72	LP2 Queens Rd (traffic lights)	Roadside	415573	434521	NO_2	Yes, AQMA 2,CAZ	0.0	3.1	No	2.5
DT235A DT235B DT235C	LP3 outside house 21 Marlborough Ave	Roadside	415474	434456	NO_2	Yes, AQMA 2,CAZ	5.0	2.5	No	2.5
DT156	LP33 Whetley Lane opp medical practice	Roadside	414781	434126	NO_2	CAZ	0.0	2.4	No	2.5
DT236	LP19 Whetley Ln outside flats opp house 63	Roadside	414498	433935	NO_2	CAZ	8.0	4.1	No	2.4
DT237	LP20 Whetley Ln A6177 opp DT236	Roadside	414536	433981	NO_2	CAZ	5.5	2.5	No	2.4
DT288	LP in front of St Phillips School gates off Fairbank Road, Girlington	Urban Background	414404	434137	NO_2	No	0.0	4.1	No	2.5
DT289	LP 7 Fairbank Road, Girlington	Roadside	414404	434106	NO_2	No	3.5	2.0	No	2.6
DT290	LP9 Fairbank Road, Girlington	Roadside	414385	434168	NO_2	No	3.5	1.9	No	2.7
DT238A DT238B DT238C	LP5 outside house 26 Wheltey Ln near junction with Thornton Rd	Roadside	414290	433759	NO_2	CAZ	6.5	3.7	No	2.4
DT239A DT239B DT239C	LP6 Whetley Ln outside no. 27 tax investigation (opposite DT238)	Roadside	414268	433765	NO_2	CAZ	4.0	4.2	No	2.4

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)
DT139A DT139B DT139C	Eden School site Thornton Road	Roadside	414396	433648	NO_2	CAZ	20.0	2.1	No	2.3
DT240A DT240B DT240C	LP92 Thornton Rd opposite DT139	Roadside	414403	433665	NO_2	CAZ	0.5	4.7	No	2.6
DT152	LP119 outside no.620 Thornton Road	Roadside	413835	433663	NO_2	No	1.5	2.9	No	2.5
DT151A DT151B DT151C	LP3 outside no.12 Allerton Road	Roadside	413700	433687	NO_2	No	2.5	2.3	No	2.6
DT149A DT149B DT149C	LP53 Cemetery Rd nr hardware store	Roadside	413750	433573	NO_2	No	5.9	2.5	No	2.4
DT241A DT241B DT241C	LP15 Cemetery Rd outside house no.137 opp cemetery	Roadside	413840	432676	NO_2	No	7.0	1.6	No	2.4
DT242A DT242B DT242C	LP18 outside house no.97 Clayton Road	Roadside	413721	432067	NO_2	No	4.7	2.4	No	2.5
DT243A DT243B DT243C	LP17 outside house no. 110 Clayton Rd	Roadside	413729	432097	NO_2	No	5.8	1.9	No	2.5
DT244	LP16 Hollingwood Lane nr Tanner Hill	Roadside	413225	431373	NO_2	No	13.3	1.7	No	2.4
DT245	LP17 Hollingwood Lane opp DT244	Roadside	413243	431386	NO_2	No	8.0	1.3	No	2.5

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)
DT246A DT246B DT246C	Concrete LP013 outside house no.65 Horton Grange Rd	Roadside	414722	432432	NO_2	CAZ	7.0	1.9	No	2.4
DT247A DT247B DT247C	Metal post 13A outside house no.66 Horton Grange Road on opp side of road to 246	Roadside	414731	432443	NO_2	CAZ	6.0	1.8	No	2.4
DT144A DT144B DT144C	LP26 Horton Grange Road opp medical centre	Kerbside	414908	432312	NO_2	CAZ	6.3	1.0	No	2.3
DT146	LP3 All Saints Rd	Roadside	415005	432231	NO_2	CAZ	0.0	5.0	No	2.3
DT143A DT143B DT143C	LP64 Bridal Shop Great Horton Rd	Kerbside	414902	432251	NO_2	CAZ	0.0	0.5	No	2.2
DT142	LP74 464 Great Horton Rd	Roadside	414724	432095	NO_2	CAZ	4.0	2.9	No	2.4
DT248	LP34 outside St Oswalds CofE academy A6177 Cross Ln	Roadside	414499	431676	NO_2	CAZ	8.3	2.1	No	2.4
DT249A DT249B DT249C	LP10 outside 76 Southfield Ln (A6177) just before Quaker Ln turn off	Roadside	414862	431173	NO_2	CAZ	2.7	1.3	No	2.3

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)
DT250A DT250B DT250C	LP12 opp DT249 across from house no.100 Southfield Ln side of Co-op Academy Grange	Roadside	414788	431184	NO_2	CAZ	23.0	2.3	No	2.4
DT252A DT252B DT252C	LP6 Southfield Rd (A6177) outside house no.35	Roadside	415228	431031	NO_2	CAZ	13.0	1.9	No	2.3
DT251A DT251B DT251C	LP7 Southfield Rd (A6177) opp DT252	Roadside	415222	431010	NO_2	CAZ	16.0	1.8	No	2.5
DT253A DT253B DT253C	LP6 Holdroyd Hill near house no.72 just after Sanderson Ave	Kerbside	415320	430090	NO_2	No	1.4	0.3	No	2.4
DT254A DT254B DT254C	LP17 Fair Rd, Wisbey nr Oakdale Cres and Medical Centre	Roadside	414637	430131	NO_2	No	6.3	2.0	No	2.3
DT255A DT255B DT255C	LP16 Fair Rd Wisbey nr caravan shop opp Oakdale Cres	Roadside	414629	430122	NO_2	No	6.0	1.8	No	2.3
DT257A DT257B DT257C	LP17 Moore Ave outside house no. 60	Roadside	414260	430531	NO_2	No	13.9	2.3	No	2.6
DT256A DT256B DT256C	LP18 Moore Ave outside house no. 113	Roadside	414239	430526	NO_2	No	13.0	2.5	No	2.4

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)
DT283	LP 237 junction of Cardigan Street and Sand Beds, Queensbury - outside no. 21	Roadside	410565	430351	NO_2	No	2.1	2.5	No	2.3
DT284	Post on the corner of Foster Street and West End, Queensbury	Roadside	410585	430112	NO_2	No	6.5	1.4	No	2.6
DT285	LP 8 Brighouse Road Near Cottages after Tesco	Roadside	410075	430120	NO_2	No	1.0	1.1	No	2.7
DT259A DT259B DT259C	LP25 Beacon Rd house no.246	Kerbside	413785	430386	NO_2	No	17.9	0.0	No	2.5
DT258A DT258B DT258C	LP26 Beacon Rd house no.167	Roadside	413749	430389	NO_2	No	12.1	1.7	No	2.3
DT298	LP 29 Reevy Avenue, Wibsey	Suburban	413814	429468	NO_2	No	9.5	1.7	No	2.7
DT299	LP 26 Reevy Avenue, Wibsey	Suburban	413832	429561	NO_2	No	9.5	4.1	No	2.5
DT261A DT261B DT261C	LP7 Netherlands Ave outside house 51	Roadside	415339	429334	NO_2	No	15.5	1.1	No	2.5
DT260A DT260B DT260C	LP8 Netherlands Ave near scout hut	Roadside	415368	429297	NO_2	No	13.0	0.8	No	2.5

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)
DT262A DT262B DT262C	LP12 outside house 50 Cleckheaton Rd	Roadside	415894	429519	NO_2	No	5.6	4.0	No	2.5
DT133	lp121 Canal Road gasworks	Roadside	416260	434581	NO_2	CAZ	-	2.2	No	2.2
DT111A DT111B DT111C	Midland Terrace (Canal Rd)	Roadside	416015	435028	NO_2	CAZ	3.0	2.6	No	2.5
DT234A DT234B DT234C	Opposite side of road to 111 LP 106 house no. 11	Roadside	416019	434990	NO_2	CAZ	-	2.4	No	2.3
DT73A DT73B DT73C	LP61 Canal Road (opp garden centre)	Kerbside	415438	435834	NO_2	CAZ	22.0	0.5	No	2.4
DT173A DT173B DT173C	LP 62 Canal Road same side as the garden centre opposite DT73.	Roadside	415442	435799	NO_2	CAZ	60.0	1.9	No	2.5
DT74	LP4 Gaisby Lane	Kerbside	415549	435918	NO_2	no	5.0	0.2	No	2.6
DT129	lp24 Valley Road	Roadside	415089	436637	NO_2	CAZ	20.0	2.6	No	2.5
DT112A DT112B DT112C	Canal Road LP nearest flats by car wash	Kerbside	415024	436743	NO_2	CAZ	9.2	1.0	No	2.4
DT174A DT174B DT174C	LP18 Valley Rd opposite car wash and DT112	Roadside	415029	436771	NO_2	CAZ	100.0	2.2	No	2.6

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)
DT131	Fox Corner Shipley	Kerbside	414856	437605	NO_2	CAZ	-	0.7	No	1.5
DT269	Victoria Street LP4	Roadside	413900	437738	NO_2	CAZ	3.5	2.5	No	2.3
DT91A DT91B DT91C	Dove St / Saltaire Rd	Roadside	413697	437723	NO_2	CAZ	0.1	2.4	No	2.5
DT175A DT175B DT175C	Saltaire Road opposite Dove St	Roadside	413709	437745	NO_2	CAZ	3.4	2.0	No	2.5
DT30A DT30B DT30C	29 Saltaire Road	Roadside	413861	437772	NO_2	CAZ	1.7	2.2	No	2.5
DT180A DT180B DT180C	Saltaire Road outside Methodist Church	Roadside	413856	437784	NO_2	CAZ	4.5	1.8	No	2.4
DT49A DT49B DT49C	outside house no.9 Moorhead Lane	Roadside	413600	437653	NO_2	CAZ	5.0	1.8	No	2.6
DT176A DT176B DT176C	Moorhead Lane opp DT49	Roadside	413597	437628	NO_2	CAZ	0.1	1.6	No	2.5
DT50	outside no.203 Bradford Road	Roadside	413510	437732	NO_2	CAZ	3.4	2.0	No	2.3
DT177A DT177B DT177C	LP 30 outside dress shop, Bradford Rd (Bingley Rd)	Roadside	413501	437732	NO_2	CAZ	2.7	3.7	No	2.3
DT31	Bradford Road / Bingley Road on	Roadside	413527	437713	NO_2	CAZ	9.6	1.6	No	2.2

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)
	traffic light opp Hirst Road									
DT101A DT101B DT101C	LP39 Bingley Rd, Saltaire nearest shops	Roadside	413418	437725	NO_2	CAZ	8.0	1.1	No	2.5
DT179A DT179B DT179C	LP40 Bradford Rd (Bingley Rd) Saltaire	Roadside	413417	437708	NO_2	CAZ	5.5	2.5	No	2.4
DT102A DT102B DT102C	LP43 Bingley Rd, Saltaire	Roadside	413338	437720	NO_2	CAZ	7.5	2.4	No	2.3
DT178A DT178B DT178C	Bingley Rd Saltaire LP 44 opposite D102	Roadside	413334	437703	NO_2	CAZ	7.2	2.9	No	2.5
DT270	Bingley Road outside COOP	Roadside	413719	437665	NO_2	CAZ	3.7	3.0	No	2.5
DT271	Bingley Road across from DT270	Roadside	413723	437678	NO_2	CAZ	2.8	2.1	No	2.6
DT287	LP outside Willow Cottage, Main Road, East Morton	Suburban	409851	441883	NO_2	No	2.0	1.5	No	2.6
DT78	LP11 Aireworth Road, Keighley	Roadside	407380	441811	NO_2	No	6.0	2.0	No	2.4
DT68 DT69 DT70	Keighley AQMS	Urban Centre	406060	441274	NO_2	No	0.0	8.0	Yes	3.6
DT190	Low Mill Keighley near Aldi	Roadside	406495	441280	NO_2	No	-	2.6	No	2.5

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)
DT191	Low Mill Keighley - opposite DT190	Kerbside	406508	441310	NO_2	No	-	0.5	No	2.5
DT21	12 Prospect Street Keighley	Urban Background	404719	440613	NO_2	No	0.5	-	No	2.4
DT134	Lp2 Rylstone Street KLY	Roadside	406940	441922	NO_2	No	13.0	1.1	No	2.3
DT135	LP17 Hard Ings Road KLY	Roadside	406582	442028	NO_2	No	6.8	2.3	No	2.6
DT136	LP18 Hard Ings Road KLY	Roadside	406540	442038	NO_2	No	0.5	2.7	No	2.6
DT137	LP21 Hard Ings Road KLY	Roadside	406475	442046	NO_2	No	4.1	2.7	No	2.4
DT138	LP28 Hard Ings Road KLY	Roadside	406255	442140	NO_2	No	-	2.3	No	2.6
DT282	LP 9 Bolton Road, Silsden - outside no. 75	Roadside	404458	446757	NO_2	No	3.5	1.5	No	2.4
DT263	LP12 A65 outside house no.31 Springbank near All Saints school	Roadside	411245	447863	NO_2	No	9.5	2.5	No	2.5
DT264	The Grove - Ilkley - outside Crew clothing	Roadside	411600	447618	NO_2	No	0.1	2.3	No	2.3
DT265	LP8 outside Midland pub, Station Rd , Ilkley	Roadside	411782	447598	NO_2	No	0.1	2.0	No	2.5

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)
DT266	LP 6 Brook St, Ilkley near Banyan	Roadside	411704	447666	NO_2	No	0.1	1.3	No	2.5
DT267	LP TC 19 Leeds Rd, Ilkley near Woody's barbers	Roadside	411786	447811	NO_2	No	0.5	2.8	No	2.5
DT268	Leeds Road Ilkley - Outside Daniels Café junction with Victory Road	Roadside	411873	447807	NO_2	No	22.5	2.5	No	2.6
DT293	Concrete LP on Cotewall Road, West Bowling	Urban Background	415950	431453	NO_2	CAZ	7.5	0.7	No	2.7
DT294	LP outside Newby Primary School enterance, Ryan Street	Urban Background	415950	431453	NO_2	CAZ	12.0	4.5	No	2.7
DT308	Downpipe on Newby Primary School House	Urban Background	415932	431360	NO_2	CAZ	0.0	4.5	No	2.8
DT103A DT103B DT103C	Mayo Ave first LP left of AQMS	Roadside	415925	430572	NO_2	Yes, AQMA 1, CAZ	5.1	3.4	No	2.6
DT104A DT104B DT104C	Mayo Ave first LP right of AQMS	Roadside	415961	430558	NO_2	Yes, AQMA 1, CAZ	5.1	3.9	No	2.5
DT188A DT188B DT188C	Mayo Avenue LP20 opposite DT104	Roadside	415979	430522	NO_2	Yes, AQMA 1, CAZ	-	1.8	No	2.5
DT189A DT189B DT189C	LP16 Mayo Avenue outside	Roadside	415910	430551	NO_2	Yes, AQMA 1, CAZ	-	2.6	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 Co-located with a Continuous Analyser?	Tube Height (m)
	Matalan car park opp DT103									
DT105	Manchester Rd LP nearest house 793	Roadside	415780	430504	NO_2	Yes, AQMA 1, CAZ	3.7	3.1	No	2.5
DT281	Manchester Road LP 79B near DT105	Roadside	415771	430476	NO_2	Yes, AQMA 1, CAZ	3.7	2.5	No	2.5
DT186A DT186B DT186C	Manchester Road opp DT105 on LP81A end of Chellow St	Roadside	415743	430482	NO_2	No	8.1	2.9	No	2.5
DT187A DT187B DT187C	Smiddles Lane LP4 in front of houses. Opposite school and DT106	Roadside	415715	430669	NO_2	Yes, AQMA 1, CAZ	2.6	2.5	No	2.6
DT106A DT106B DT106C	Smiddles Lane LP nearest fence to Bankfoot School	Roadside	415702	430701	NO_2	Yes, AQMA 1, CAZ	0.0	3.6	No	2.3
DT192A DT192B DT192C	Mayo Avenue LP32 outside house no 144	Roadside	416218	430420	NO_2	Yes, AQMA 1, CAZ	11.1	3.7	No	2.5
DT193A DT193B DT193C	Mayo Avenue LP31 opposite 192	Roadside	416239	430435	NO_2	CAZ	10.5	2.7	No	2.4
DT212A DT212B DT212C	Rooley Avenue LP11 outside house 49	Roadside	416398	430194	NO_2	CAZ	11.1	3.7	No	2.4
DT213A DT213B DT213C	Rooley Avenue LP12 opposite house 212	Roadside	416390	430214	NO_2	CAZ	13.0	1.3	No	2.5

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)
DT211A DT211B DT211C	Manchester Road LP63B opposite 210	Roadside	415922	431089	NO_2	CAZ	5.5	2.4	No	2.5
DT295	LP outside All Saints Church on Kenion Street	Urban Background	415691	432039	NO_2	CAZ	39.0	2.8	No	2.8
DT296	LP outside All Saints Church on Little Horton Green	Urban Background	415710	432070	NO_2	CAZ	30.0	1.7	No	2.3
DT297	LP further down from church on Little Horton Green	Urban Background	415618	432070	NO_2	CAZ	14.5	1.6	No	2.7
DT84	Wilton St- Omar Khan's	Roadside	416054	432675	NO_2	CAZ	0.0	12.5	No	2.5
DT79	Centenary Square	Urban Centre	416282	432966	NO_2	CAZ	0.1	70.0	No	2.6
DT161A DT161B DT161C	Godwin Street LP 6	Roadside	416148	433102	NO_2	CAZ	0.1	1.8	No	2.4
DT162A DT162B DT162C	Godwin Street LP 7	Roadside	416148	433134	NO_2	CAZ	0.1	2.7	No	2.4
DT163A DT163B DT163C	Godwin St LP 8	Roadside	416147	433158	NO_2	CAZ	0.1	1.7	No	2.6
DT164A DT164B DT164C	Godwin St EASA training	Roadside	416139	433134	NO_2	CAZ	0.1	1.7	No	2.6

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)
DT109A DT109B DT109C	LP 20 Thornton Road near AQMS	Roadside	415858	433061	NO_2	Yes , AQMA 3, CAZ	0.1	4.3	No	2.6
DT181A DT181B DT181C	LP opposite DT109 Thornton Road	Roadside	415845	433041	NO_2	Yes , AQMA 3, CAZ	0.1	10.1	No	2.3
DT108A DT108B DT108C	LP18 Thornton Road near AQMS	Roadside	415891	433045	NO_2	Yes , AQMA 3, CAZ	0.1	4.3	No	2.7
DT182A DT182B DT182C	LP opposite DT108 Thornton Road	Roadside	415874	433026	NO_2	Yes , AQMA 3, CAZ	0.1	9.9	No	2.3
DT110	LP adjacent to student accommodation Thornton Road	Roadside	415806	433061	NO_2	Yes , AQMA 3, CAZ	2.0	9.0	No	2.4
DT279	Lister Hills Road LP3 near junction with Thornton Road	Roadside	415591	433141	NO_2	CAZ	-	1.8	No	2.5
DT280	Thornton Road LP 32 near junction with Lister Hills Road	Roadside	415665	433175	NO_2	CAZ	-	1.7	No	2.6
DT183	Sunbridge Road near Tesco	Roadside	416215	433059	NO_2	CAZ	7.1	1.1	No	2.4
DT184	Sunbridge Road near Tesco across road from DT183	Kerbside	416217	433071	NO_2	CAZ	3.1	0.6	No	2.4

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)
DT167A DT167B DT167C	LP 4 Market St	Kerbside	416392	433046	NO_2	CAZ	2.5	0.6	No	2.5
DT185A DT185B DT185C	Market St opposite DT167	Roadside	416381	433054	NO_2	CAZ	2.4	1.9	No	2.5
DT277	Market Street, Attached to Hot Crazes Building	Kerbside	416398	433050	NO_2	CAZ	0.1	1.7	No	2.4
DT12A DT12B DT12C	Treadwell Mills - Shipley Airedale Rd	Roadside	416970	433259	NO^2	Yes , AQMA 4, CAZ	0.5	3.4	No	2.4

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
CM2	406058	441273	Urban Centre	full year	95.0	24	20	22	21	20.0
CM3	415582	434457	Roadside	full year	96.1	**43**	35	32	27	25.4
CM4	415933	430569	Roadside	full year	99.1	**41**	34	38	33	31.8
CM5	415870	433054	Roadside	full year	85.6	39	29	34	31	28.3
CM6	416974	433245	Roadside	full year	96.8	**46**	38	**41**	37	35.0
CM7	417860	430705	Roadside	full year	97.4	38	29	35	32	30.9
CM8	419188	430213	Roadside	full year	94.5	33	23	23	25	23.1

☒ **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 (confirm by selecting in box).**

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 NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

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
DT168	417033	429293	Suburban	100	100.0			29.4	27.3	24.5
DT198	417930	430975	Roadside	100	100.0			29.0	30.2	29.4
DT197	417846	430739	Roadside	90.4	90.4			25.3	27.9	26.4
DT196	417369	430370	Roadside	90.4	90.4			28.8	28.9	28.7
DT195	417178	430344	Roadside	100	100.0			30.9	30.1	29.9
DT194	417184	430315	Roadside	100	100.0			25.3	24.8	23.6
DT76	418268	430732	Kerbside	100	100.0	26.0	23.7	27.0	20.6	23.9
DT45	417877	430717	Roadside	90.4	90.4	27.0	24.0	25.2	24.3	23.5
DT214A DT214B DT214C	417715	429299	Roadside	100	100.0			20.9	21.0	19.7
DT215A DT215B DT215C	417708	429380	Roadside	100	100.0			15.9	16.7	15.7

DT216A DT216B DT216C	418853	430309	Roadside	92.3	92.3			16.4	17.8	16.5
DT217A DT217B DT217C	418829	430288	Roadside	82.7	82.7			15.6	16.9	14.7
DT88	418829	430399	Roadside	84.6	84.6	26.0	25.5	27.8	24.2	23.8
DT89A DT89B DT89C	419188	430213	Roadside	100	100.0	29.0	24.8	29.9	28.5	26.5
DT199A DT199B DT199C	419178	430193	Roadside	100	100.0			18.7	20.7	19.9
DT64A DT64B DT64C	419342	430114	Roadside	100	100.0	34.0	31.5	32.7	28.8	28.1
DT200A DT200B DT200C	419328	430099	Roadside	100	100.0			20.7	21.0	19.7

DT220A DT220B DT220C	419215	431809	Roadside	92.3	92.3			17.8	18.7	17.3
DT221A DT221B DT221C	419196	431834	Roadside	92.3	92.3			16.3	16.6	15.7
DT222A DT222B DT222C	417861	431486	Roadside	100	100.0			21.0	23.8	22.3
DT223A DT223B DT223C	417862	431536	Roadside	82.7	82.7			36.8	38.5	37.3
DT218A DT218B DT218C	418292	431290	Roadside	100	100.0			30.1	29.1	28.5
DT219A DT219B DT219C	418303	431328	Roadside	100	100.0			25.6	25.9	23.0
DT116	418564	432218	Roadside	90.4	90.4	24.0	18.9	20.6	22.6	19.9
DT118	418666	432470	Roadside	90.4	90.4	27.0	20.5	22.1	24.1	22.1

DT201	418108	432322	Roadside	100	100.0			30.0	28.0	28.2
DT202	418135	432272	Roadside	90.4	90.4			22.0	21.2	20.6
DT203	418345	432366	Roadside	100	100.0			23.6	25.6	25.5
DT160A DT160B DT160C	418644	432898	Roadside	75	75.0		22.9	24.4	23.8	22.5
DT204A DT204B DT204C	418640	432870	Roadside	100	100.0			19.2	20.6	20.1
DT120A DT120B DT120C	417991	432926	Roadside	100	100.0	31.0	27.1	30.6	30.5	30.6
DT209A DT209B DT209C	417960	432907	Roadside	100	100.0			33.1	31.3	30.8
DT205	418597	433111	Roadside	100	100.0			24.4	26.0	25.3
DT206	418579	433109	Roadside	90.4	90.4			29.4	30.9	28.2
DT233	418546	433430	Roadside	92.3	92.3			25.5	27.6	26.5

DT232	418563	433432	Roadside	100	100.0			23.0	22.8	23.2
DT230A DT230B DT230C	418784	434409	Roadside	100	100.0			19.0	20.9	19.8
DT231A DT231B DT231C	418791	434424	Roadside	75	75.0			17.7	19.6	18.2
DT5	417982	434886	Roadside	100	100.0	29.0	25.7	28.3	29.0	27.0
DT39A DT39B DT39C	417927	434799	Roadside	84.6	84.6	31.0	26.2	28.2	26.5	26.1
DT208A DT208B DT208C	417966	434884	Roadside	100	100.0			19.4	21.9	20.6
DT99	418033	434970	Roadside	59.6	59.6	24.0	19.3	20.7	22.6	22.7
DT86	417894	434753	Roadside	90.4	90.4	27.0	23.3	28.0	28.9	25.3
DT42A DT42B DT42C	417902	434751	Roadside	100	100.0	34.0	30.6	33.1	31.3	29.6

DT207A DT207B DT207C	417912	434759	Roadside	100	100.0			22.4	24.5	23.3
DT228A DT228B DT228C	418090	434429	Roadside	100	100.0			32.3	35.0	32.3
DT229A DT229B DT229C	418059	434509	Roadside	100	100.0			22.9	25.2	22.2
DT92	419006	437217	Roadside	100	100.0	32	24.5		26.0	24.5
DT93	419003	437308	Roadside	73.1	73.1	30	25.8		23.7	21.6
DT286	419103	437334	Roadside	100	100.0				24.2	21.2
DT94	419076	437345	Roadside	92.3	92.3	23	18.4		17.9	15.5
DT273	419138	437213	Roadside	100	100.0				23.0	20.6
DT274	419107	437314	Roadside	100	100.0				25.9	25.5
DT275	419317	437551	Roadside	75	75.0				27.0	25.7
DT276	418979	437969	Kerbside	50	50.0				16.9	12.9

DT305	418640	436130	Suburban	25	17.3					-
DT306	418567	436068	Suburban	37.5	25.0					12.7
DT307	418476	436067	Suburban	75	48.1					11.7
DT272	417661	433528	Roadside	100	100.0				25.1	23.7
DT224A DT224B DT224C	417117	433431	Roadside	92.3	92.3			26.4	25.3	23.3
DT225A DT225B DT225C	417087	433444	Kerbside	100	100.0			33.3	35.0	32.6
DT227A DT227B DT227C	417054	434165	Roadside	100	100.0			20.9	22.4	20.8
DT123A	414766	437113	Roadside	100	100.0		33.2	34.3	32.3	28.6
DT123	414660	436974	Kerbside	90.4	90.4		33.2	34.3	34.0	29.8
DT124	414620	436924	Roadside	92.3	92.3		34.0	31.6	30.2	27.0
DT121	414546	436933	Roadside	100	100.0		22.0	22.1	21.3	19.2

DT122	414567	436811	Roadside	82.7	82.7		30.3	30.4	29.0	27.3
DT126	414643	436505	Kerbside	75	75.0		19.4	20.1	19.2	18.0
DT125	414674	436471	Roadside	100	100.0		15.1	18.5	19.2	16.4
DT127	415044	435558	Roadside	100	100.0		36.1	37.5	35.7	33.3
DT128	415331	435796	Urban Background	100	100.0		13.0	12.5	12.6	11.3
DT130	415839	434674	Roadside	100	100.0		29.7	31.3	28.3	28.2
DT132	415717	434265	Roadside	57.7	57.7		34.9	37.8	37.2	31.9
DT301	415429	434016	Urban Background	87.5	59.6					18.9
DT302	415483	434048	Urban Background	62.5	42.3					19.0
DT303	415337	434016	Urban Background	100	67.3					19.4
DT304	415447	434047	Urban Background	100	67.3					18.2
DT71A DT71B DT71C	415580	434461	Roadside	100	100.0	36.0	30.4	29.7	34.0	29.2
DT278	415570	434477	Roadside	84.6	84.6				38.8	37.1

DT172A DT172B DT172C	415590	434478	Roadside	100	100.0			30.2	30.7	28.0
DT72	415573	434521	Roadside	92.3	92.3	**57.0**	**47.1**	**48.8**	**44.4**	**44.2**
DT235A DT235B DT235C	415474	434456	Roadside	100	100.0			32.5	35.3	34.1
DT156	414781	434126	Roadside	92.3	92.3		33.3	30.0	33.7	32.6
DT236	414498	433935	Roadside	90.4	90.4			22.2	23.8	23.6
DT237	414536	433981	Roadside	90.4	90.4			23.9	26.1	25.8
DT288	414404	434137	Urban Background	100	67.3					18.2
DT289	414404	434106	Roadside	87.5	59.6					21.6
DT290	414385	434168	Roadside	87.5	57.7					19.5
DT238A DT238B DT238C	414290	433759	Roadside	92.3	92.3			24.4	26.6	25.1

DT239A DT239B DT239C	414268	433765	Roadside	100	100.0			30.3	34.5	33.0
DT139A DT139B DT139C	414396	433648	Roadside	100	100.0	22.0	22.3	25.3	30.7	28.9
DT240A DT240B DT240C	414403	433665	Roadside	100	100.0			30.0	33.2	32.0
DT152	413835	433663	Roadside	100	100.0		33.4	30.7	35.4	34.0
DT151A DT151B DT151C	413700	433687	Roadside	100	100.0		27.5	25.3	29.1	28.4
DT149A DT149B DT149C	413750	433573	Roadside	100	100.0		27.9	28.1	30.9	31.0
DT241A DT241B DT241C	413840	432676	Roadside	100	100.0			21.4	24.9	24.2

DT242A DT242B DT242C	413721	432067	Roadside	100	100.0			17.3	19.6	18.3
DT243A DT243B DT243C	413729	432097	Roadside	100	100.0			21.7	23.4	22.8
DT244	413225	431373	Roadside	100	100.0			15.2	16.6	17.7
DT245	413243	431386	Roadside	100	100.0			16.2	17.3	17.3
DT246A DT246B DT246C	414722	432432	Roadside	90.4	90.4			26.3	27.8	26.1
DT247A DT247B DT247C	414731	432443	Roadside	92.3	92.3			20.9	24.0	23.8
DT144A DT144B DT144C	414908	432312	Kerbside	100	100.0		29.9	28.9	31.8	29.5
DT146	415005	432231	Roadside	82.7	82.7		19.4	20.9	23.1	22.0

DT143A DT143B DT143C	414902	432251	Kerbside	92.3	92.3		34.2	33.3	36.2	36.6
DT142	414724	432095	Roadside	100	100.0		27.8	27.6	30.1	30.2
DT248	414499	431676	Roadside	92.3	92.3			26.6	28.5	26.5
DT249A DT249B DT249C	414862	431173	Roadside	34.6	34.6			25.9	28.7	26.9
DT250A DT250B DT250C	414788	431184	Roadside	76.9	76.9			20.5	23.8	23.1
DT252A DT252B DT252C	415228	431031	Roadside	100	100.0			29.5	30.5	29.3
DT251A DT251B DT251C	415222	431010	Roadside	100	100.0			22.7	25.4	23.9
DT253A DT253B DT253C	415320	430090	Kerbside	84.6	84.6			23.5	27.6	25.2

DT254A DT254B DT254C	414637	430131	Roadside	100	100.0			18.5	20.5	18.6
DT255A DT255B DT255C	414629	430122	Roadside	100	100.0			16.4	19.6	19.0
DT257A DT257B DT257C	414260	430531	Roadside	100	100.0			14.6	16.0	15.5
DT256A DT256B DT256C	414239	430526	Roadside	100	100.0			11.1	13.9	13.3
DT283	410565	430351	Roadside	100	100.0				18.6	18.1
DT284	410585	430112	Roadside	100	100.0				18.1	18.1
DT285	410075	430120	Roadside	92.3	92.3				14.6	14.0
DT259A DT259B DT259C	413785	430386	Kerbside	100	100.0			17.3	20.2	19.4

DT258A DT258B DT258C	413749	430389	Roadside	92.3	92.3			18.5	20.0	19.0
DT298	413814	429468	Suburban	87.5	59.6					12.2
DT299	413832	429561	Suburban	100	67.3					11.3
DT261A DT261B DT261C	415339	429334	Roadside	100	100.0			12.8	14.1	13.5
DT260A DT260B DT260C	415368	429297	Roadside	100	100.0			12.0	13.5	13.1
DT262A DT262B DT262C	415894	429519	Roadside	92.3	92.3			26.6	27.6	25.1
DT133	416260	434581	Roadside	92.3	92.3		30.4	32.1	30.9	28.1
DT111A DT111B DT111C	416015	435028	Roadside	100	100.0	31.0	29.4	33.8	31.5	30.1

DT234A DT234B DT234C	416019	434990	Roadside	100	100.0			30.1	31.0	29.5
DT73A DT73B DT73C	415438	435834	Kerbside	100	100.0	38.0	33.2	38.0	36.0	35.0
DT173A DT173B DT173C	415442	435799	Roadside	76.9	76.9			32.1	29.6	25.9
DT74	415549	435918	Kerbside	90.4	90.4	18.0	17.1	17.2	15.9	14.7
DT129	415089	436637	Roadside	100	100.0		26.8	28.2	26.2	25.2
DT112A DT112B DT112C	415024	436743	Kerbside	100	100.0	32.0	28.3	28.7	25.7	23.3
DT174A DT174B DT174C	415029	436771	Roadside	100	100.0			23.3	23.3	21.0
DT131	414856	437605	Kerbside	75	75.0		37.0	39.1	37.6	34.1
DT269	413900	437738	Roadside	92.3	92.3				18.5	17.4

DT91A DT91B DT91C	413697	437723	Roadside	100	100.0	29.0	27.7	30.5	27.1	26.6
DT175A DT175B DT175C	413709	437745	Roadside	100	100.0			27.2	27.6	26.9
DT30A DT30B DT30C	413861	437772	Roadside	90.4	90.4	31.0	26.9	31.3	28.8	27.1
DT180A DT180B DT180C	413856	437784	Roadside	100	100.0			19.7	21.4	20.7
DT49A DT49B DT49C	413600	437653	Roadside	100	100.0	27.0	22.4	25.9	22.0	21.0
DT176A DT176B DT176C	413597	437628	Roadside	100	100.0			19.4	19.8	18.7
DT50	413510	437732	Roadside	48.1	48.1	**49.0**	**40.7**	**41.8**	39.0	35.2

DT177A DT177B DT177C	413501	437732	Roadside	100	100.0			32.3	30.1	29.6
DT31	413527	437713	Roadside	92.3	92.3	**42.0**	37.9	**41.4**	**40.5**	39.4
DT101A DT101B DT101C	413418	437725	Roadside	90.4	90.4	34.0	31.3	37.9	33.2	30.9
DT179A DT179B DT179C	413417	437708	Roadside	90.4	90.4			30.9	30.6	29.2
DT102A DT102B DT102C	413338	437720	Roadside	100	100.0	38.0	32.5	31.4	26.8	26.2
DT178A DT178B DT178C	413334	437703	Roadside	100	100.0			30.6	29.6	27.6
DT270	413719	437665	Roadside	100	100.0				33.4	31.4
DT271	413723	437678	Roadside	100	100.0				35.3	34.2
DT287	409851	441883	Suburban	100	100.0					11.0

DT78	407380	441811	Roadside	82.7	82.7	21.0	14.0	17.0	18.3	16.6
DT68 DT69 DT70	406060	441274	Urban Centre	100	100.0	28.0	20.7	22.0	21.1	19.9
DT190	406495	441280	Roadside	92.3	92.3			26.5	25.3	27.1
DT191	406508	441310	Kerbside	65.4	65.4			**44.7**	**45.5**	**42.0**
DT21	404719	440613	Urban Background	84.6	84.6	10.0	7.7	8.0	8.8	8.1
DT134	406940	441922	Roadside	100	100.0		34.5	35.4	33.7	32.1
DT135	406582	442028	Roadside	100	100.0		29.5	29.7	28.0	26.3
DT136	406540	442038	Roadside	100	100.0		28.3	29.6	30.7	28.8
DT137	406475	442046	Roadside	100	100.0		28.6	34.1	35.3	32.5
DT138	406255	442140	Roadside	100	100.0		30.5	33.5	33.8	32.6
DT282	404458	446757	Roadside	90.4	90.4				24.4	23.4
DT263	411245	447863	Roadside	100	100.0			13.3	15.1	14.6
DT264	411600	447618	Roadside	100	100.0			12.3	14.5	13.2
DT265	411782	447598	Roadside	92.3	92.3			20.8	21.1	19.6

DT266	411704	447666	Roadside	100	100.0			17.7	19.2	18.9
DT267	411786	447811	Roadside	100	100.0			20.1	21.5	21.6
DT268	411873	447807	Roadside	84.6	84.6				19.1	20.3
DT293	415950	431453	Urban Background	50	32.1					17.4
DT294	415950	431453	Urban Background	62.5	67.3					23.5
DT308	415932	431360	Urban Background	85.7	50.0					21.3
DT103A, DT103B, DT103C	415925	430572	Roadside	100	100.0	35.0	35.4	37.6	32.2	30.8
DT104A, DT104B, DT104C	415961	430558	Roadside	100	100.0	38.0	38.5	**41.0**	34.8	32.7
DT188A, DT188B, DT188C	415979	430522	Roadside	100	100.0			25.1	26.1	24.6
DT189A, DT189B, DT189C	415910	430551	Roadside	100	100.0			28.6	26.9	25.0

DT105	415780	430504	Roadside	67.3	67.3	37.0	33.6	37.6	39.9	39.4
DT281	415771	430476	Roadside	100	100.0				**41.2**	39.8
DT186A, DT186B, DT186C	415743	430482	Roadside	100	100.0			21.4	23.0	21.3
DT187A, DT187B, DT187C	415715	430669	Roadside	100	100.0			25.9	25.6	24.3
DT106A, DT106B, DT106C	415702	430701	Roadside	100	100.0	28.0	23.7	24.0	24.4	22.3
DT192A, DT192B, DT192C	416218	430420	Roadside	89.8	89.8			22.4	23.4	21.7
DT193A, DT193B, DT193C	416239	430435	Roadside	67.9	67.9			28.7	29.2	26.5
DT212A, DT212B, DT212C	416398	430194	Roadside	100	100.0			25.6	23.9	23.1

DT213A, DT213B, DT213C	416390	430214	Roadside	100	100.0			22.3	23.0	21.7
DT211A, DT211B, DT211C	415922	431089	Roadside	100	100.0			**41.4**	**44.1**	38.2
DT295	415691	432039	Urban Background	100	67.3					17.5
DT296	415710	432070	Urban Background	62.5	42.9					19.0
DT297	415618	432070	Urban Background	100	67.3					16.3
DT84	416054	432675	Roadside	100	100.0	28.0	24.1	29.0	27.1	25.3
DT79	416282	432966	Urban Centre	72.5	72.5	27.0	20.7	24.6	23.9	23.9
DT161A, DT161B, DT161C	416148	433102	Roadside	82.1	82.1		36.0	**43.2**	**40.6**	39.2
DT162A, DT162B, DT162C	416148	433134	Roadside	82.1	82.1		31.5	38.9	37.1	35.4

DT163A, DT163B, DT163C	416147	433158	Roadside	82.1	82.1		27.6	36.5	36.8	35.1
DT164A, DT164B, DT164C	416139	433134	Roadside	82.1	82.1		30.8	34.0	34.1	33.6
DT109A, DT109B, DT109C	415858	433061	Roadside	100	100.0	31.0	28.9	32.3	29.2	27.3
DT181A, DT181B, DT181C	415845	433041	Roadside	100	100.0			27.1	27.2	26.9
DT108A, DT108B, DT108C	415891	433045	Roadside	100	100.0	32.0	30.6	33.2	30.0	29.3
DT182A, DT182B, DT182C	415874	433026	Roadside	100	100.0			25.6	26.7	25.0
DT110	415806	433061	Roadside	100	100.0	27.0	23.7	26.5	26.2	25.3
DT279	415591	433141	Roadside	76.9	76.9				26.3	28.4

DT280	415665	433175	Roadside	90.4	90.4				31.6	31.5
DT183	416215	433059	Roadside	71.7	71.7			38.4	38.8	39.4
DT184	416217	433071	Kerbside	82.1	82.1			36.5	37.5	37.1
DT167A, DT167B, DT167C	416392	433046	Kerbside	100	100.0			**45.3**	39.1	36.2
DT185A, DT185B, DT185C	416381	433054	Roadside	100	100.0			37.8	35.8	33.0
DT277	416398	433050	Kerbside	100	100.0				34.0	33.9
DT12A, DT12B, DT12C	416970	433259	Roadside	100	100.0	**52.0**	**45.8**	**50.6**	**49.3**	**47.8**

☒ **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/m^3.

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.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 NO_2 concentration at automatic monitoring sites in Bradford

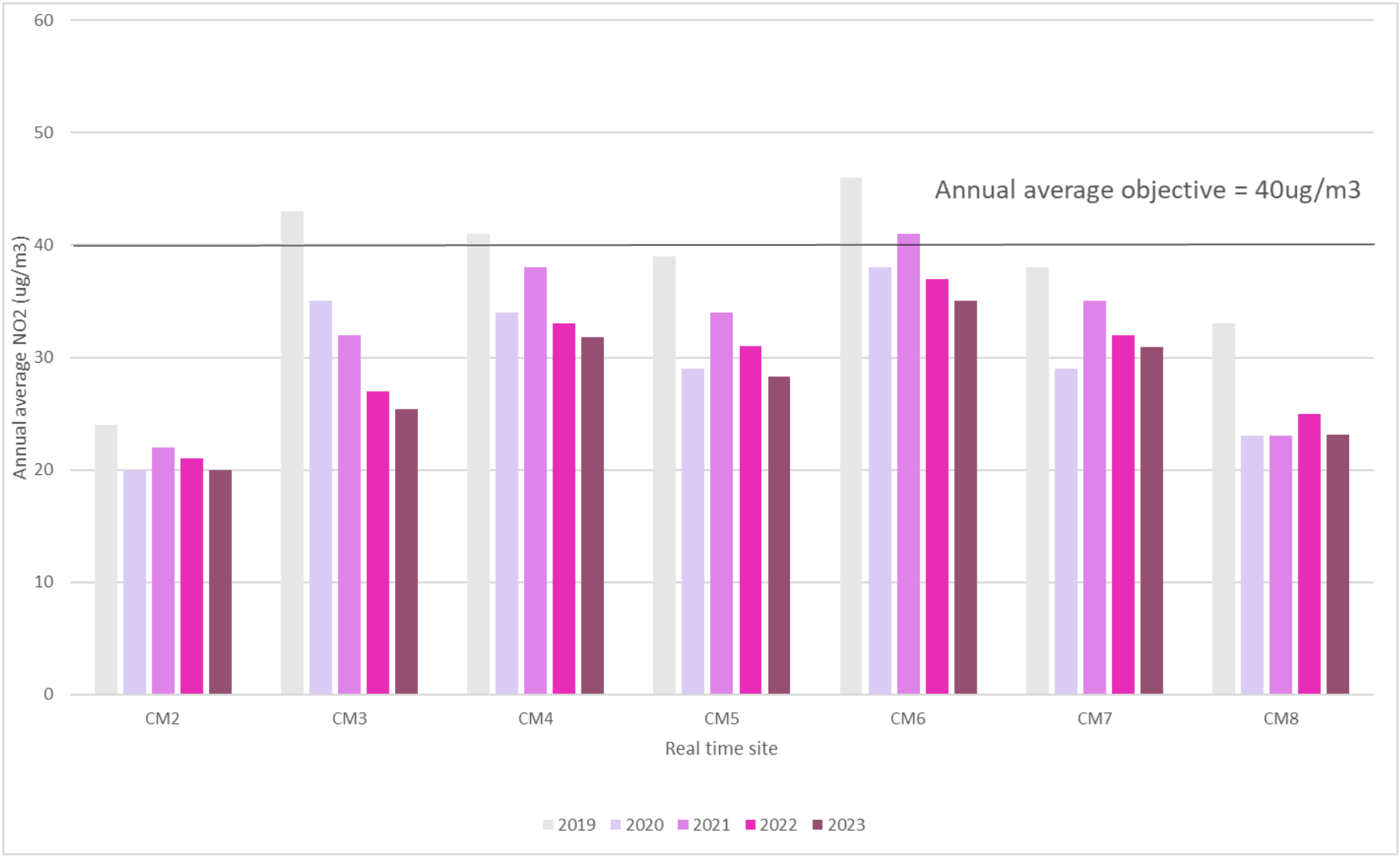
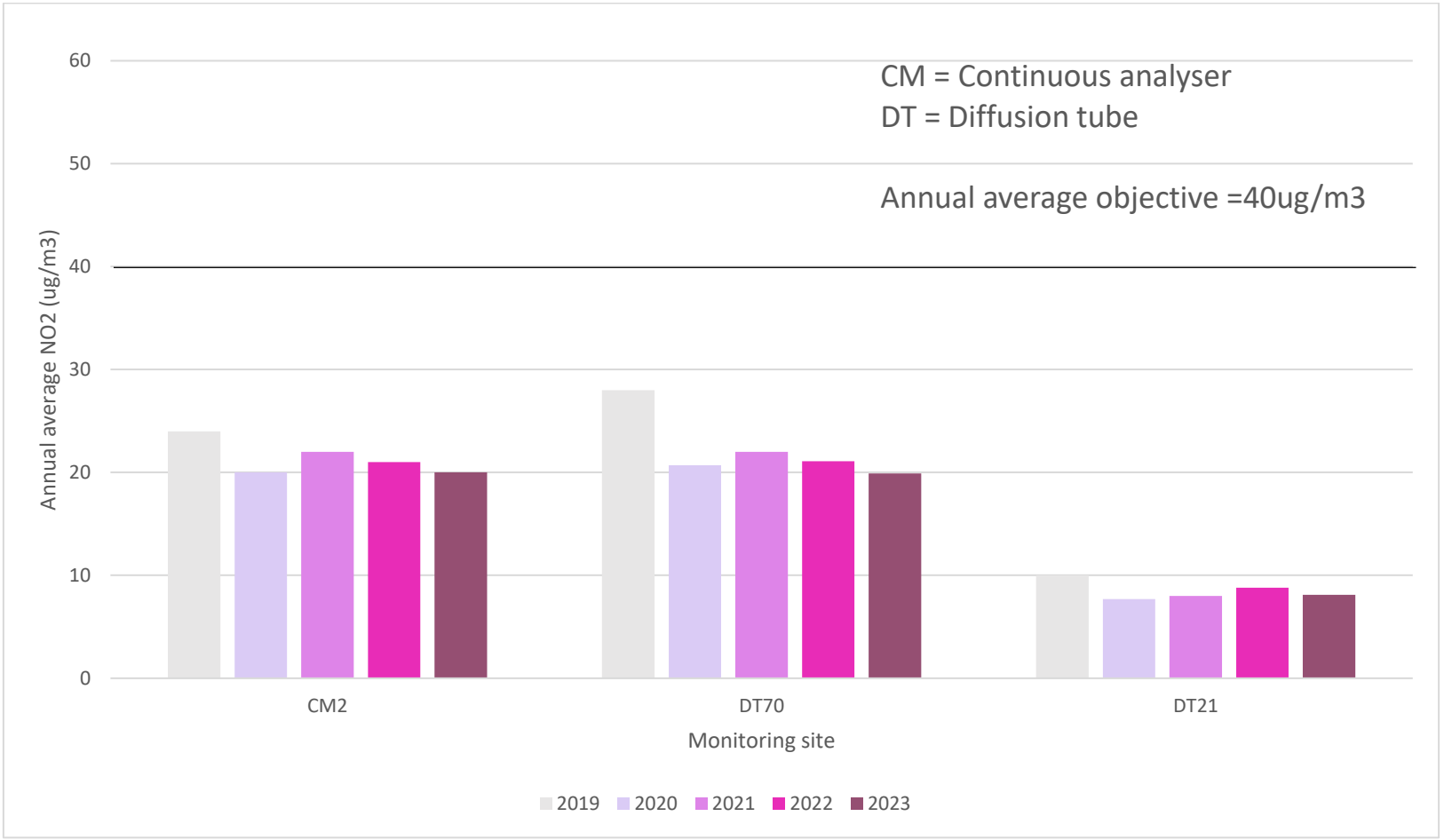


Figure A.2: Trends in Annual Mean NO_2 Concentrations at all background sites



Figure

Figure A.3: Trends in Annual Mean NO_2 Concentrations in Mayo Avenue AQMA (order 1)

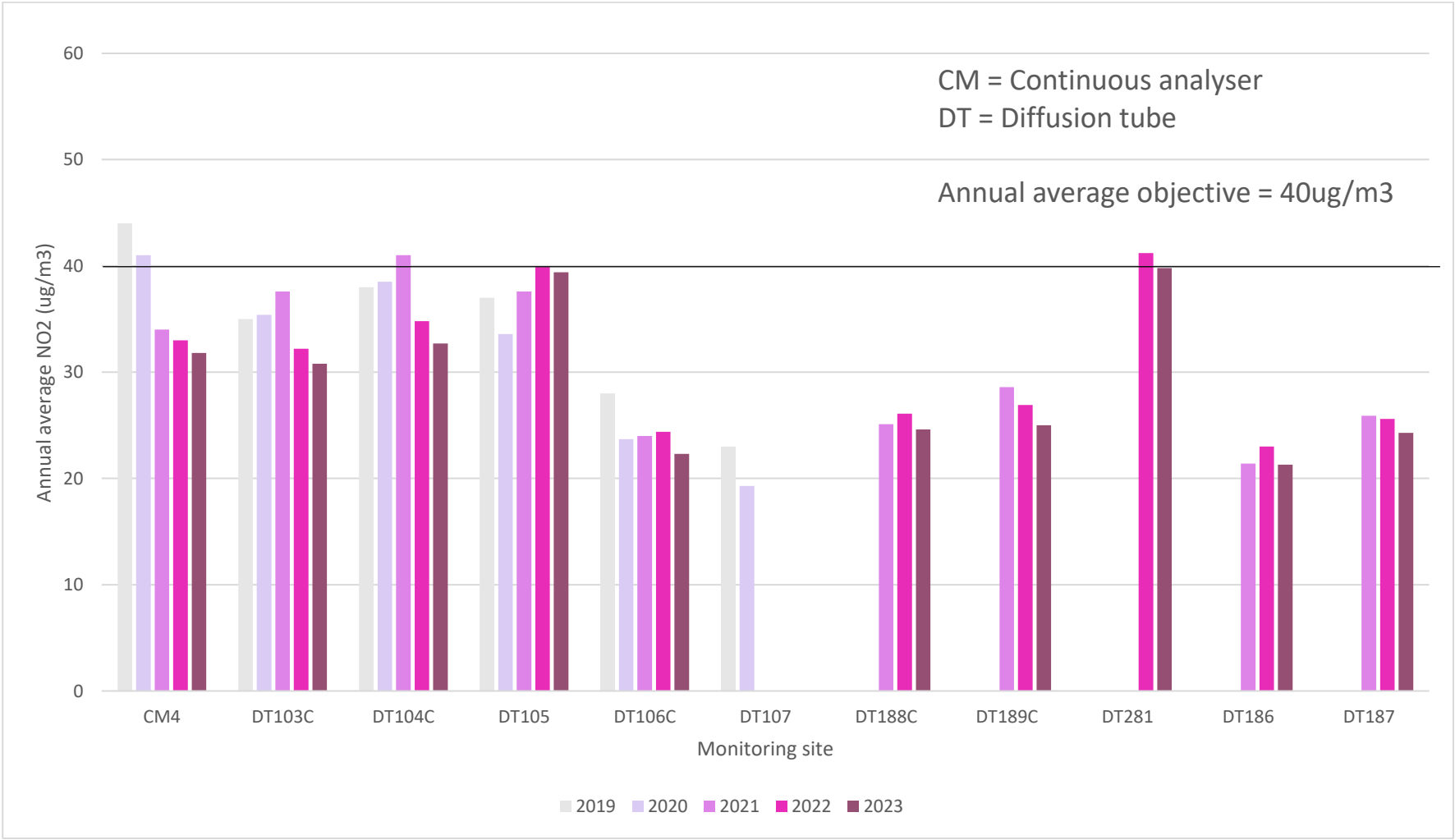


Figure A.4: Trends in Annual Mean NO_2 Concentrations in Manningham Lane AQMA (order 2)

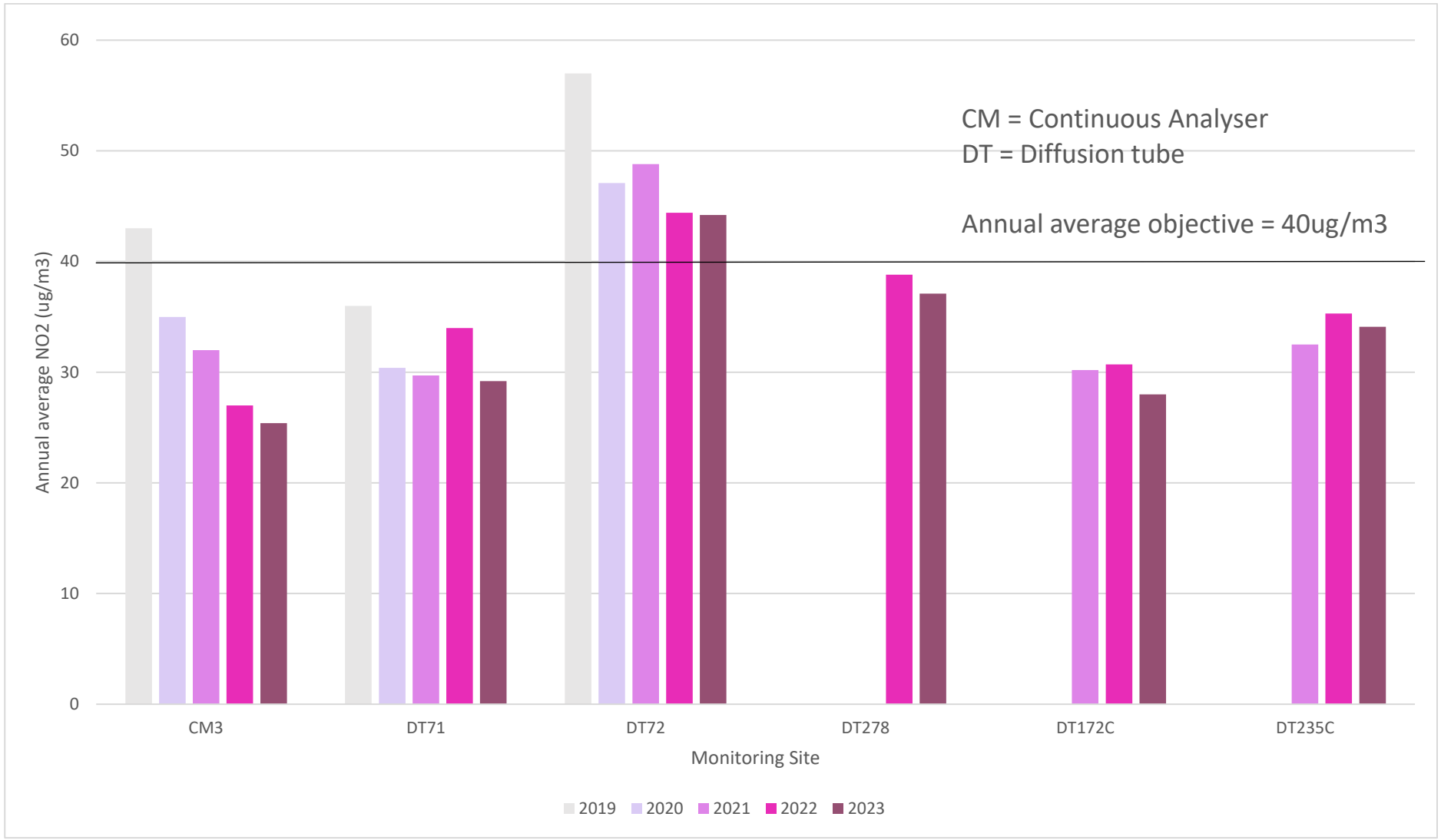


Figure A.5: Trends in Annual Mean NO_2 Concentrations in Thornton Road AQMA (order 3)

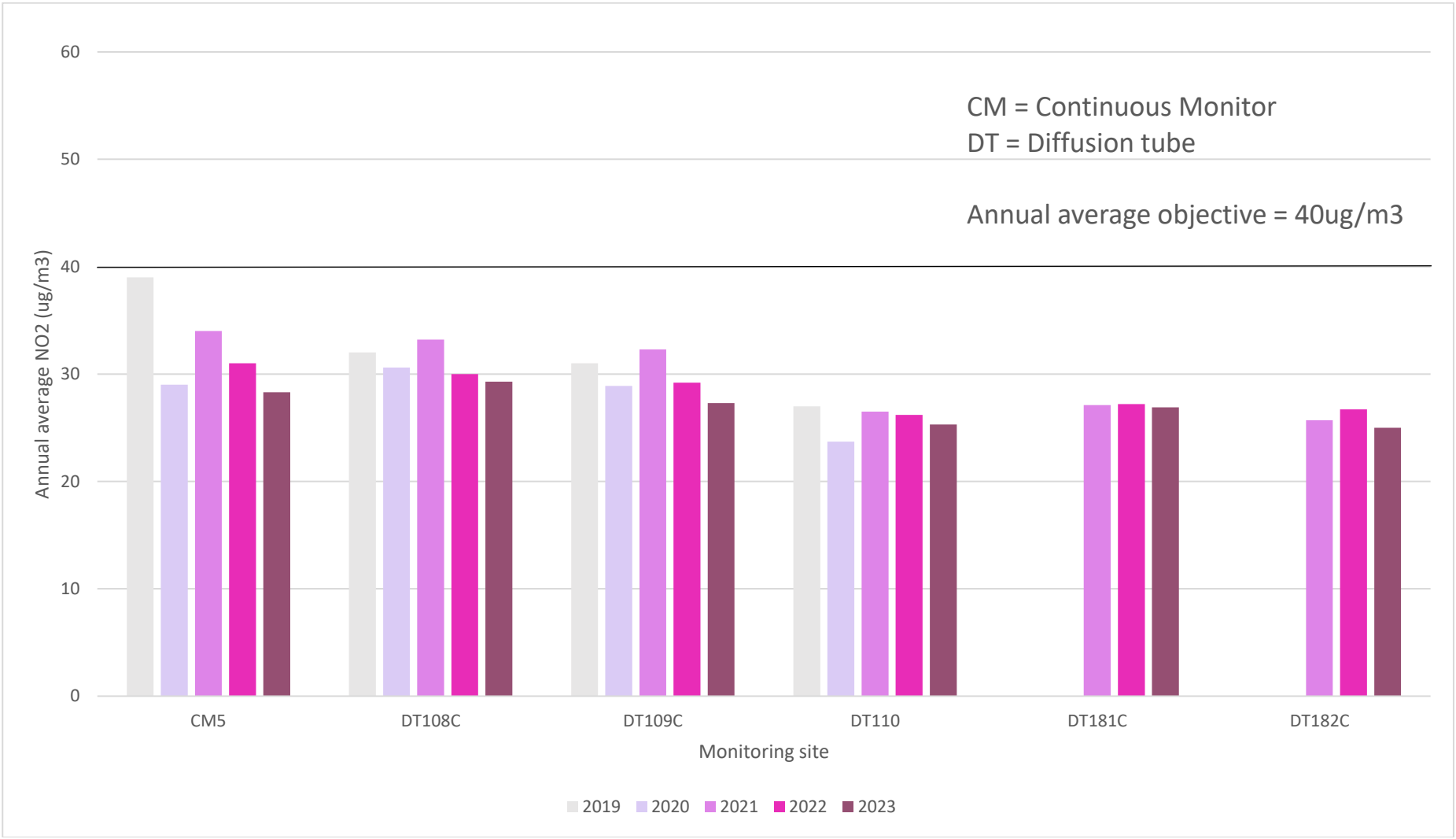


Figure A.6: Trends in Annual Mean NO_2 Concentrations in Shipley Airedale Road AQMA (order 4)

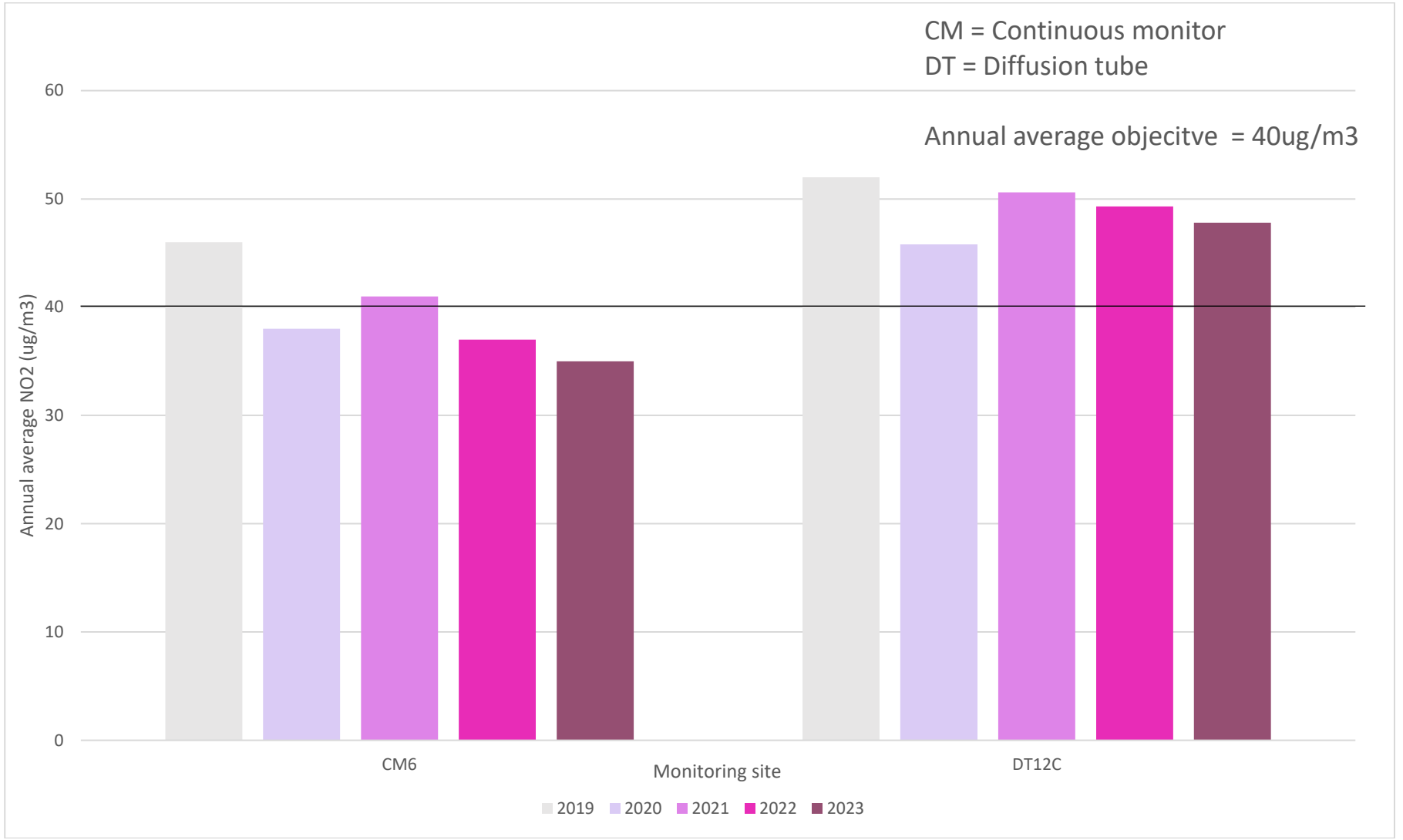


Figure A.7: Trends in Annual Mean NO_2 Concentrations around Harrogate Road / Killinghall junction

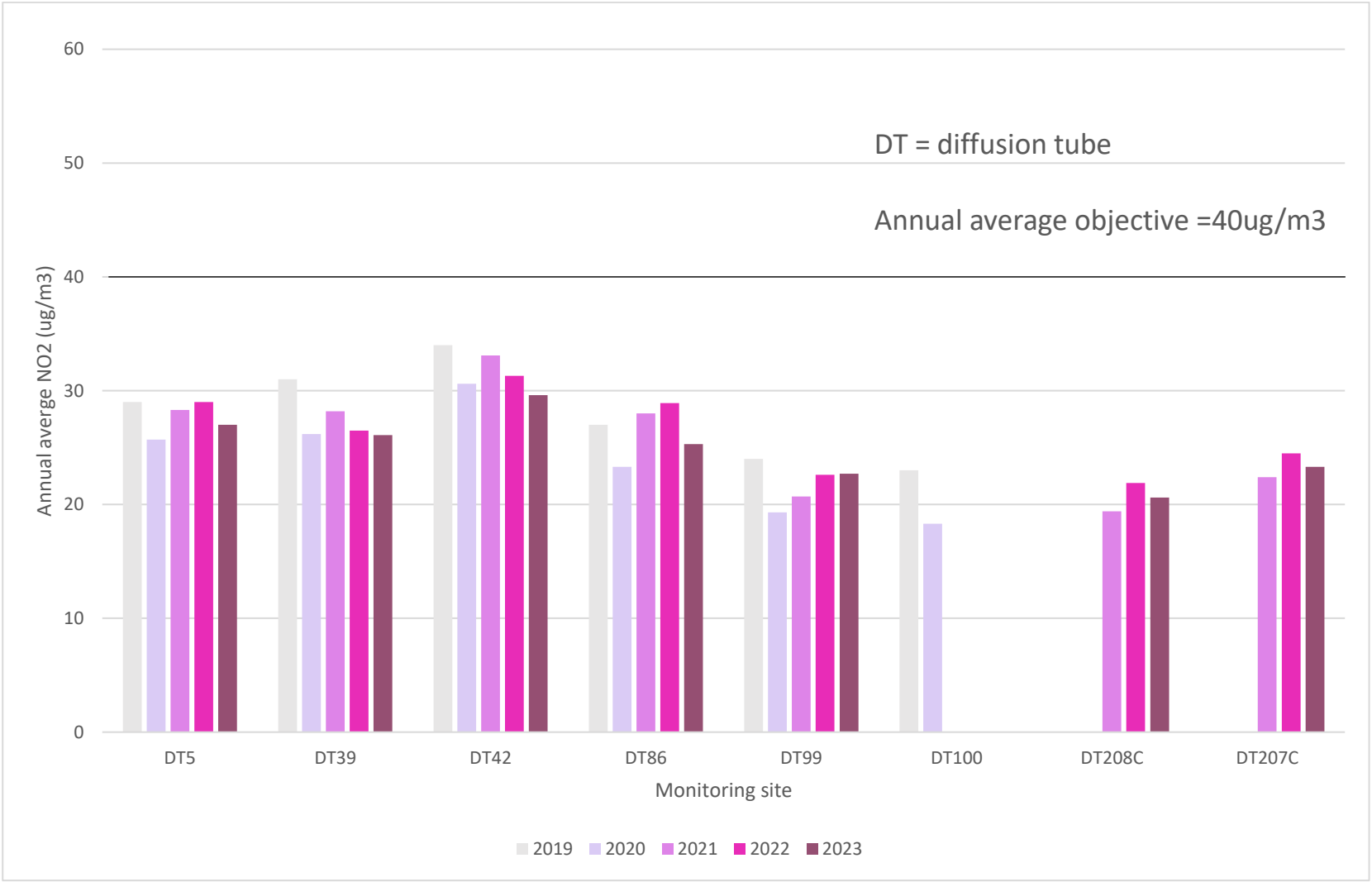


Figure A.8 Trends in Annual Mean NO_2 Concentrations around Saltaire Crossroads

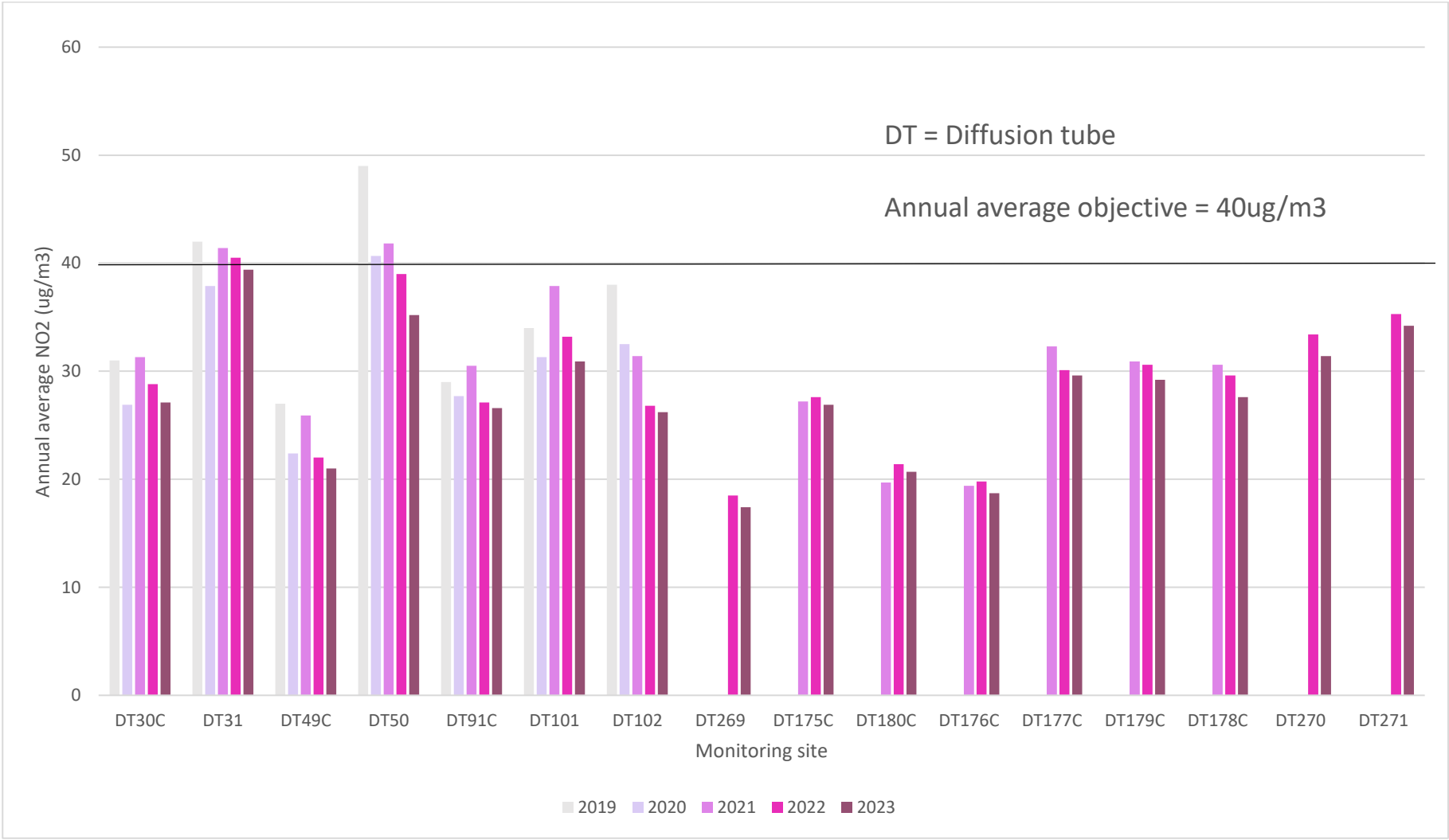


Figure A.9: Trends in Annual Mean NO_2 Concentrations around Rooley Lane and Tong Street (area of concern)

Figure A.10: Trends in Annual Mean NO_2 Concentrations around Canal Road (area of concern)

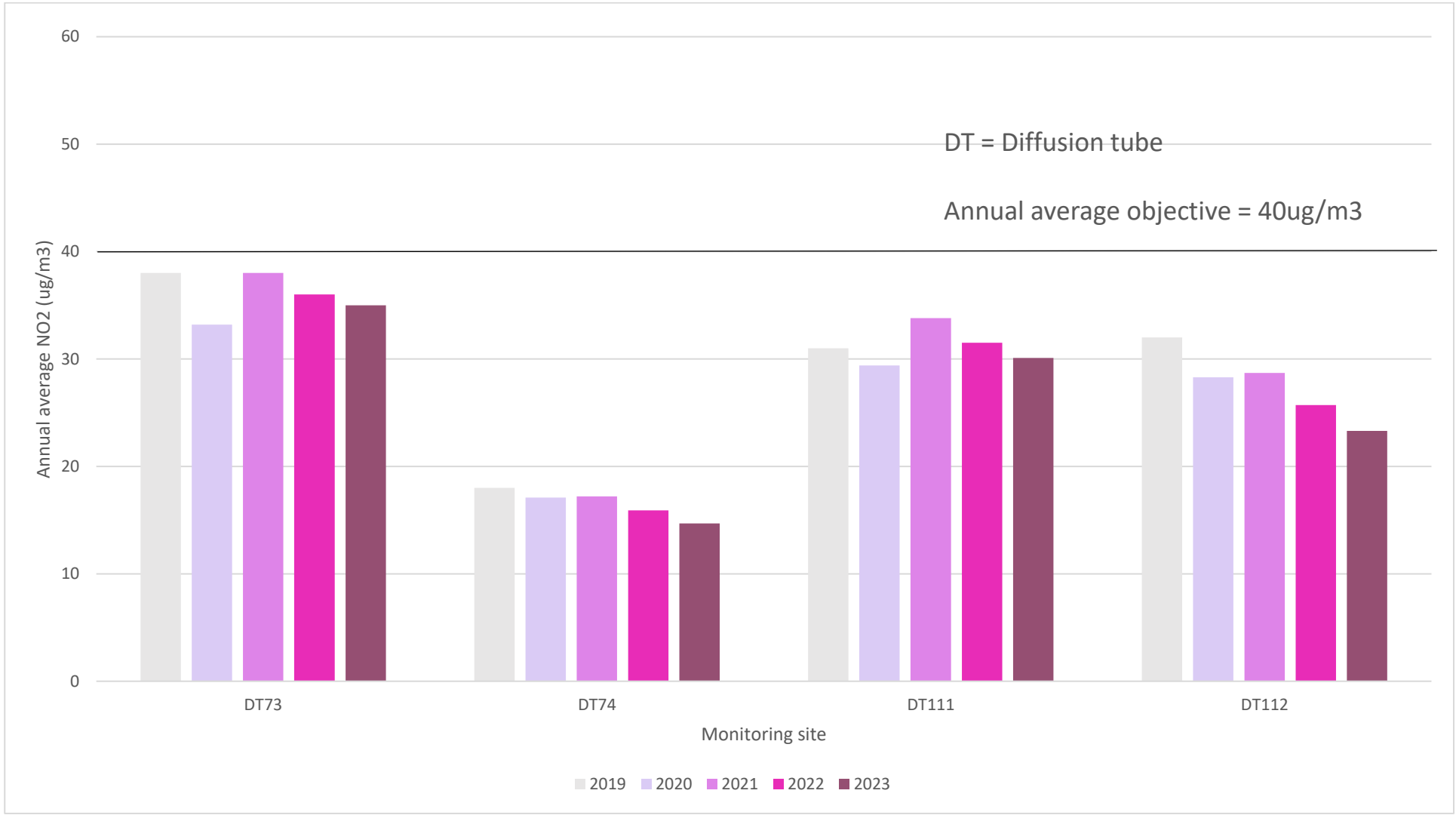


Figure A.11: Trends in Annual Mean NO_2 Concentrations around Greengates Crossroads

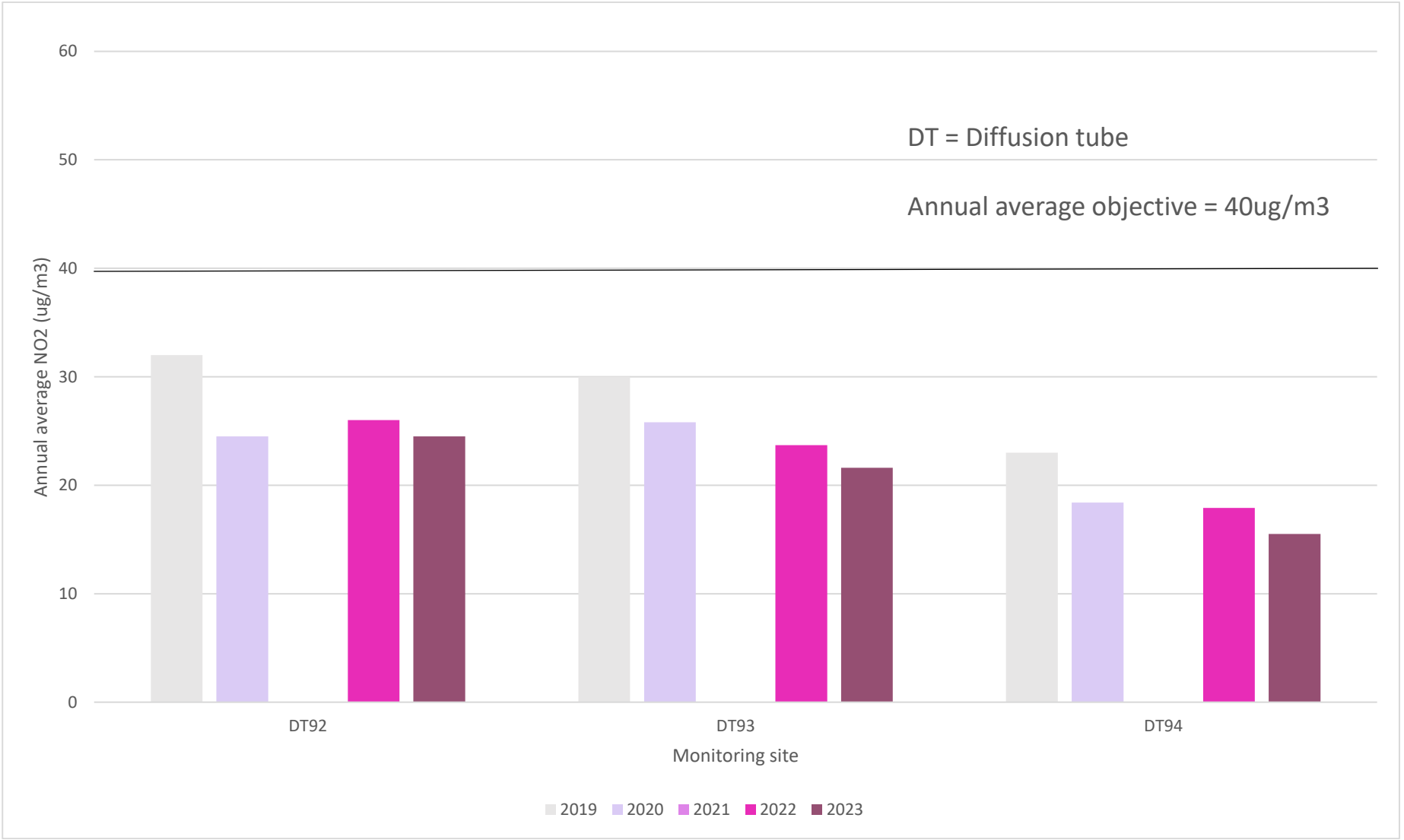


Figure A.12: Trends in Annual Mean NO_2 Concentrations at long term city centre sites

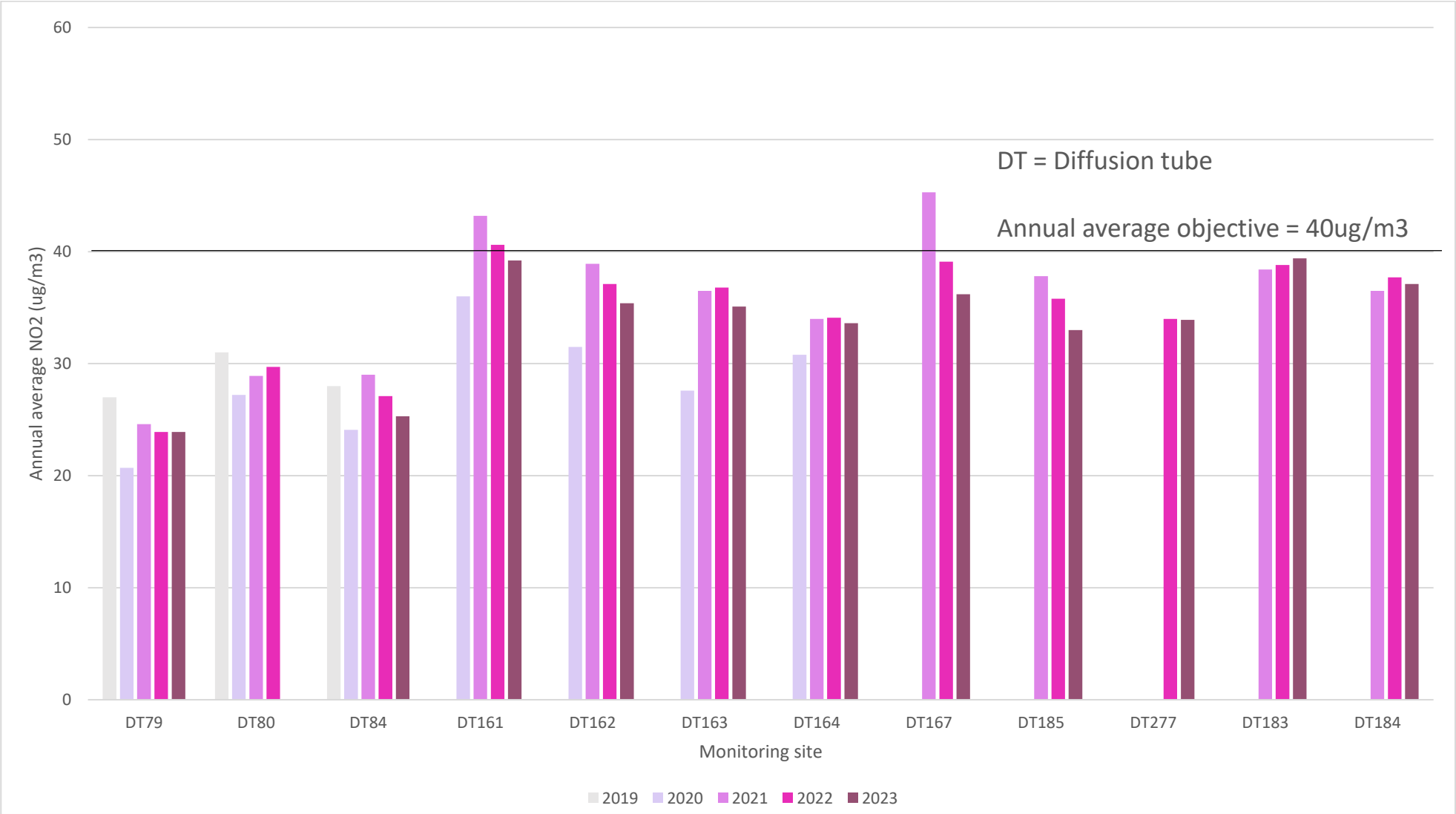


Figure A.13: Trends in Annual Mean NO_2 Concentrations around Parry Lane and Leeds Road

Figure A.14: Trends in Annual Mean NO_2 Concentrations at planning baseline sites

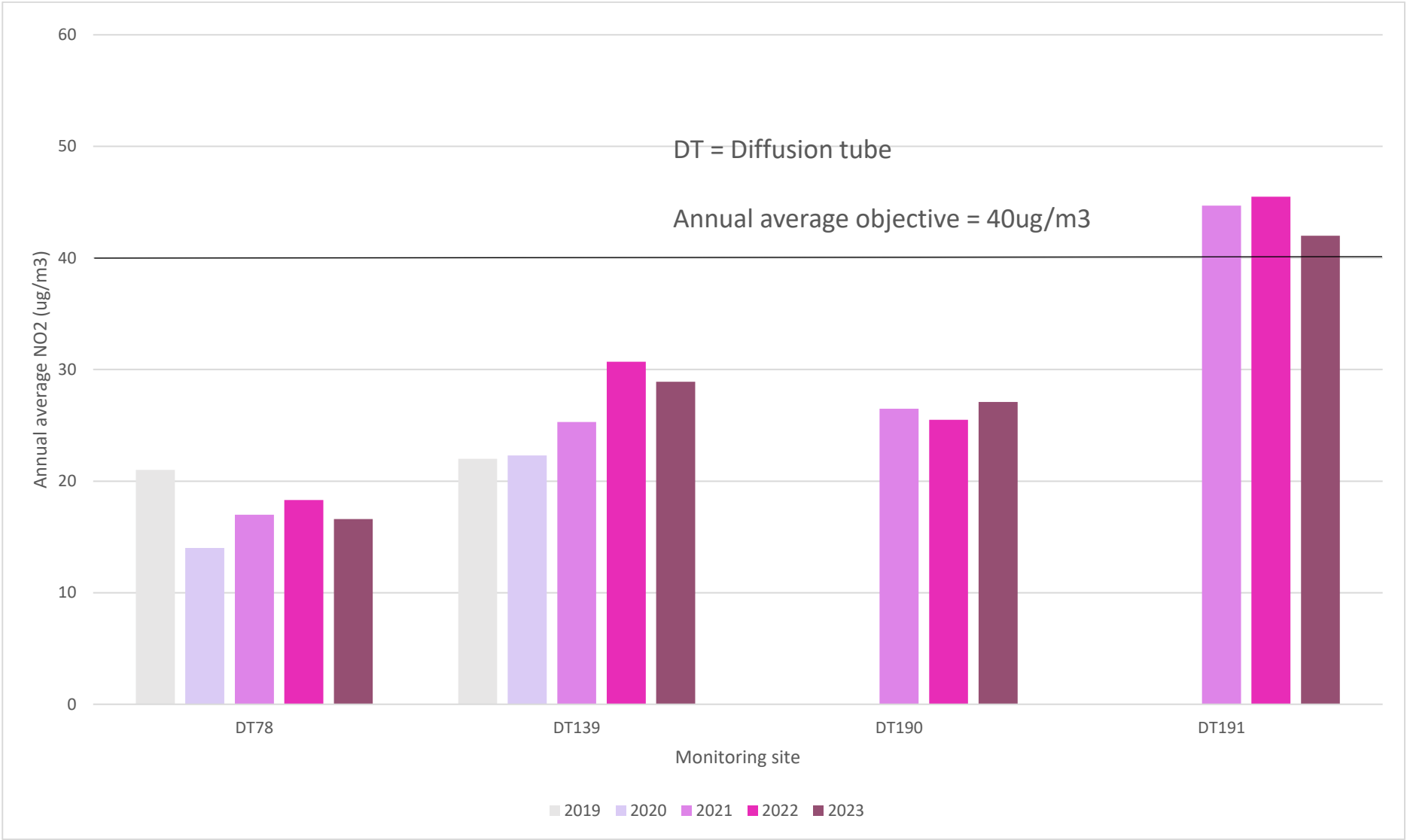


Table A.15 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

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
CM2	406058	441273	Urban Centre	full year	95	0	0	**0 (61.0)**	0	0
CM3	415582	434457	Roadside	full year	96.1	0	0	0	0	0
CM4	415933	430569	Roadside	full year	99.1	0	**0 (116.4)**	0	0	0
CM5	415870	433054	Roadside	full year	85.6	0	0	**0 (93.3)**	0	0
CM6	416974	433245	Roadside	full year	96.8	0	0	**0 (99.7)**	0	0
CM7	417860	430705	Roadside	full year	97.4	0	0	**0 (129.4)**	0	0
CM8	419188	430213	Roadside	full year	94.5	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.16 – 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	406058	441273	Urban Centre	full year	92.7	16	12	12	13	12.2
CM6	416974	433245	Roadside	full year	89.6	23	17	17	17	16.4
CM8	419188	430213	Roadside	full year	88.5	17	14	14	14	14.4

☒ **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%).

Figure A.15 – Trends in Annual Mean PM_{10} Concentrations

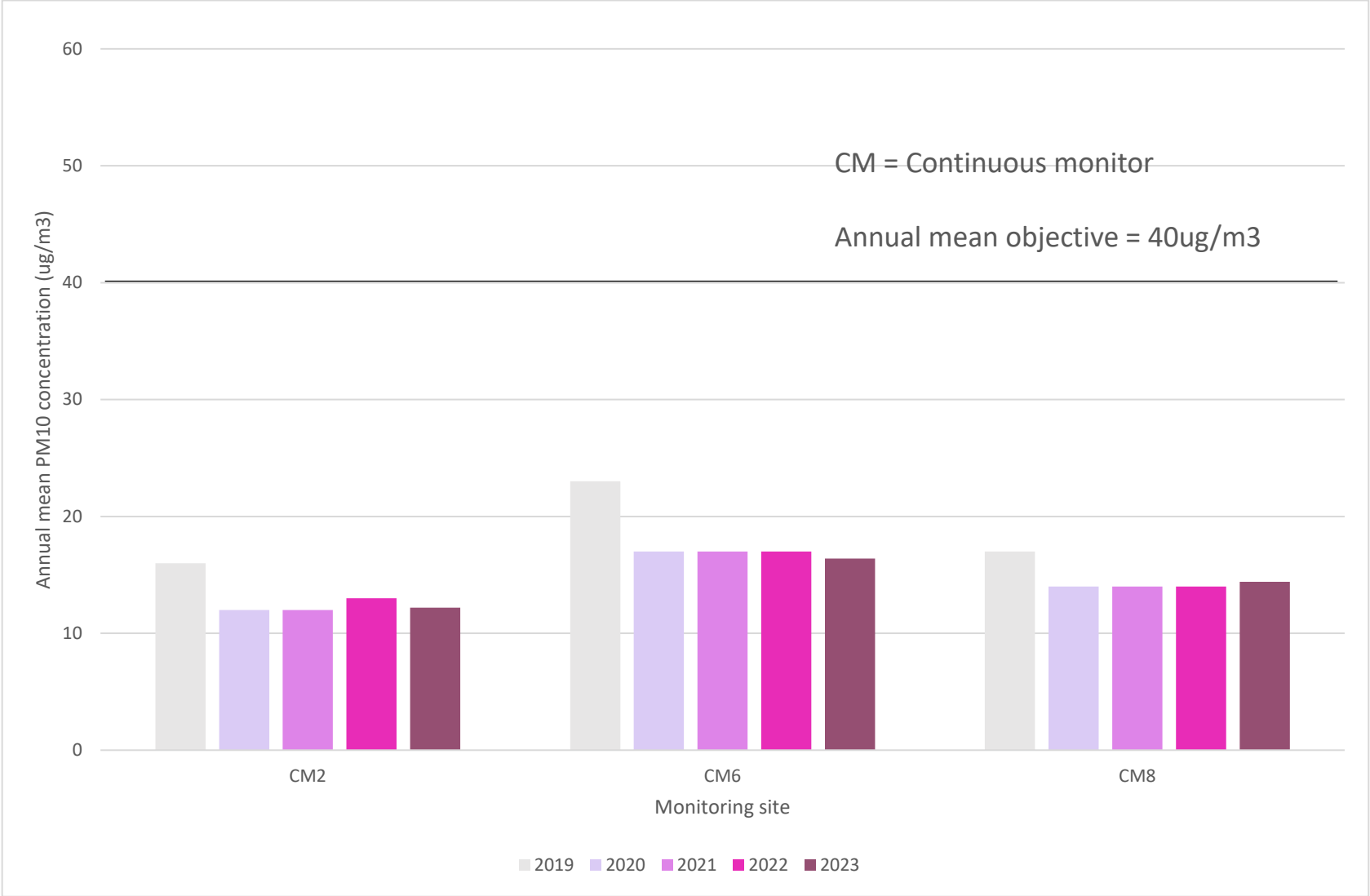


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

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	406058	441273	Urban Centre	full year	92.7	4	1	0	2	2
CM6	416974	433245	Roadside	full year	88.5	12	4	1	6	3
CM8	419188	430213	Roadside	full year	89.6	1	2	0	3	1

Notes:

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

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

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

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

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

Figure A.16 – Trends in Number of 24-hour Mean PM10 Results >50µg/m^3

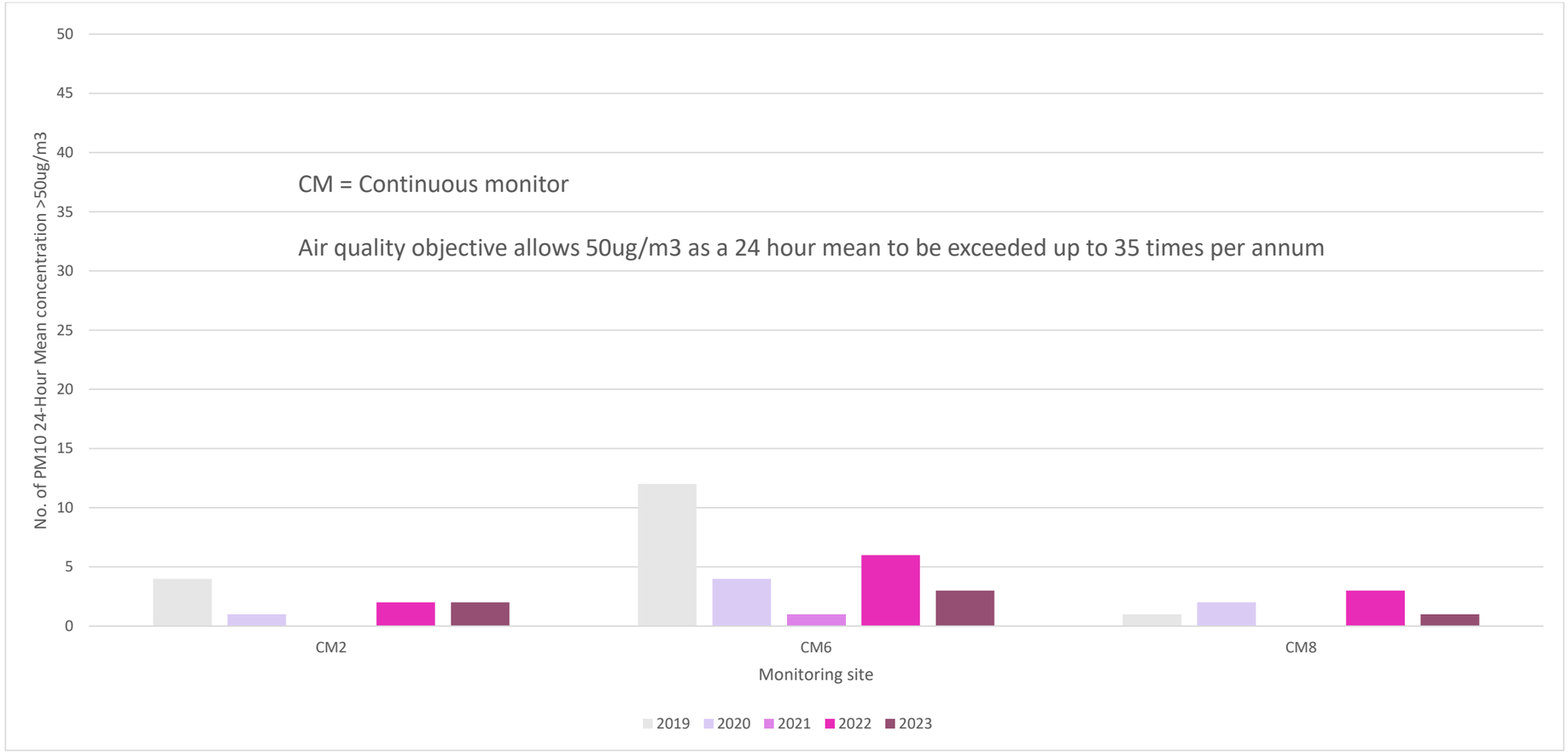


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

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	406058	441273	Urban Centre	full year	91.4	10	5	7	9	7.7
CM6	416974	433245	Roadside	full year	87.0	14	9	9	9	8.4
CM8	419188	430213	Roadside	full year	90.4	12	7	8	8	7.1

☒ **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%).

Figure 17 – Trends in Annual Mean PM2.5 Concentrations

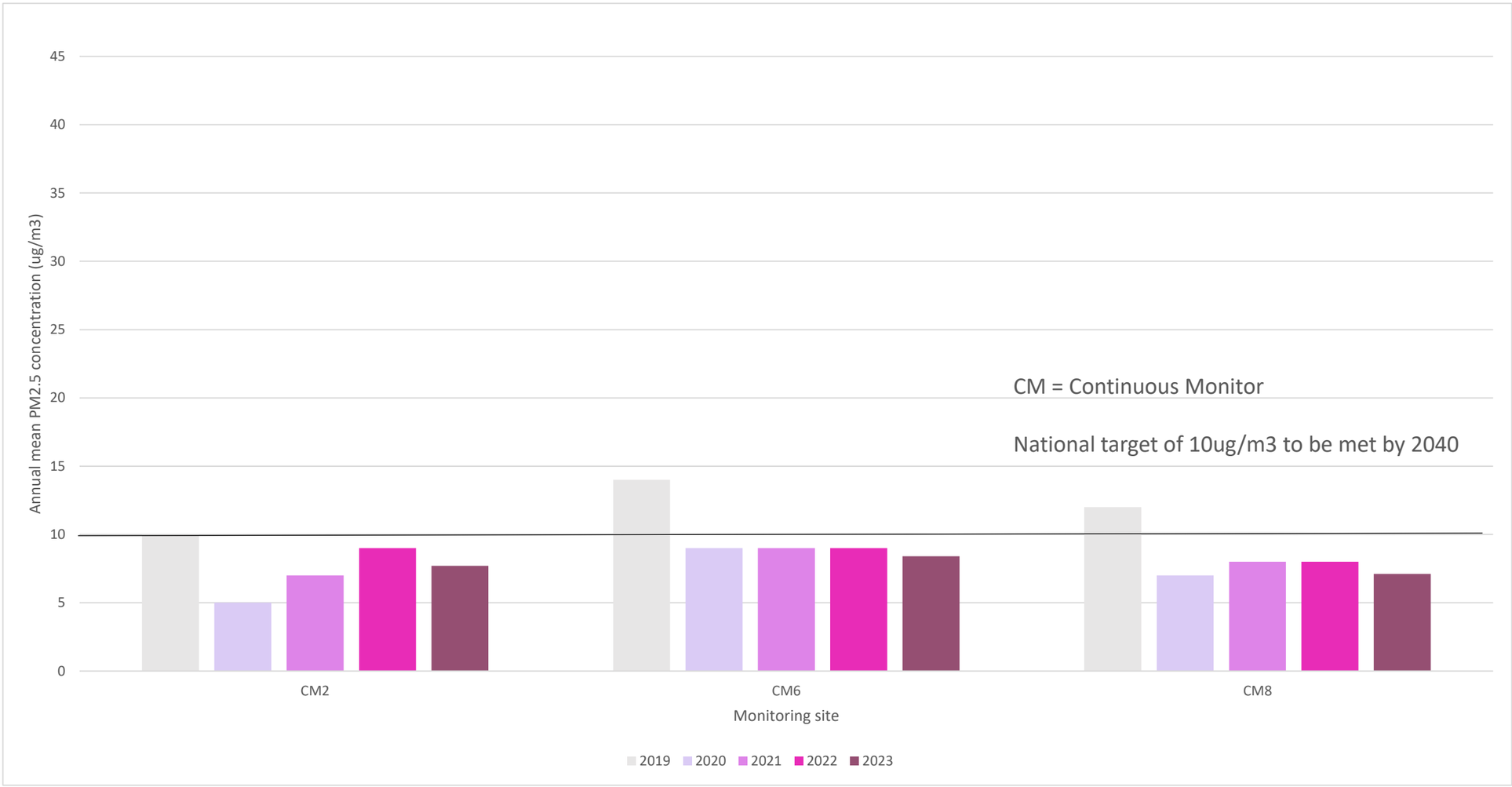


Table A.9 – Average PM10 concentration measured by low cost sensor network for the period June 2023 to December 2023

Site ID	Area	Site Type	Located in a smoke control area?	Valid Data Capture 2023 (%)	Valid Data Capture for monitoring period (June to Dec 2023) (%)	Mean (ug/m3) (June 2023 to Dec 2023)
Zephyr 1	Silsden	Background housing area	No	56.2	99.2	8.2
Zephyr 2	Saltaire	Suburban housing area	Yes	54.0	95.2	10.3
Zephyr 3	Ilkley	Background housing area	No	56.3	99.3	8.2
Zephyr 4	Girlington	Suburban housing area	Yes	56.4	99.5	10.1
Zephyr 5	Horton	Suburban housing area	Yes	55.1	97.2	10.0
Zephyr 6	East Bowling	Suburban housing area	Yes	56.4	99.5	10.6
Zephyr 7	Apperley Bridge	Background housing area (close to canal marina)	No	56.4	99.5	11.4
Zephyr 8	Low Moor	Suburban housing area (close to industrial site)	Yes	56.4	99.5	11.0
Zephyr 9	Eccleshill	Suburban housing area (outside a primary school)	Yes	56.4	99.5	9.7
Zephyr 10	Little Horton	Suburban (outside a nursery school)	Yes	54.7	96.5	10.4
Zephyr 11	Buttershaw	Background (housing estate outside a primary school)	Yes	56.4	99.5	9.8
Zephyr 12	Keighley	Urban Centre (co-located with automatic monitoring site)	Yes	53.2	93.8	10.7

Indicative low cost sensor data for a six month period (not annualised). Data is not suitable for direct comparison with air quality objectives.

Table A.10 – Average PM2.5 concentration measured by low cost sensor network for the period June 2023 to December 2023

Site ID	Area	Site Type	Located in a smoke control area?	Valid Data Capture 2023 (%)	Valid Data Capture for monitoring period (June to Dec 2023) (%)	Mean (ug/m3) (June 2023 to Dec 2023)
Zephyr 1	Silsden	Background housing area	No	56.2	99.2	4.7
Zephyr 2	Saltaire	Suburban housing area	Yes	54.0	95.2	6.6
Zephyr 3	Ilkley	Background housing area	No	56.3	99.3	5.1
Zephyr 4	Girlington	Suburban housing area	Yes	56.4	99.5	6.6
Zephyr 5	Horton	Suburban housing area	Yes	55.1	97.2	6.6
Zephyr 6	East Bowling	Suburban housing area	Yes	56.4	99.5	6.8
Zephyr 7	Apperley Bridge	Background housing area (close to canal marina)	No	56.4	99.5	7.4
Zephyr 8	Low Moor	Suburban housing area (close to industrial site)	Yes	56.4	99.5	7.2
Zephyr 9	Eccleshill	Suburban housing area (outside a primary school)	Yes	56.4	99.5	6.4
Zephyr 10	Little Horton	Suburban (outside a nursery school)	Yes	54.7	96.5	6.8
Zephyr 11	Buttershaw	Background (housing estate outside a primary school)	Yes	56.4	99.5	6.4
Zephyr 12	Keighley	Urban Centre (co-located with automatic monitoring site)	Yes	53.2	93.8	6.8

Indicative low cost sensor data for a six month period (not annualised). Data is not suitable for direct comparison with air quality objectives.

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO_2 2023 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT168	417033	429293	34.9	35.8	31.1	25.7	26.8	19.7	27.6	27.4	30.0	29.1	34.9	31.4	29.5	24.5	-	
DT198	417930	430975	31.1	39.1	37.5	37.0	34.6	33.4	31.1	31.2	40.7	40.9	39.4	28.6	35.4	29.4	-	
DT197	417846	430739	33.2	31.9	35.0	36.7	33.5		21.8	26.3	34.6	31.9	36.4	28.6	31.8	26.4	-	
DT196	417369	430370	43.2	42.0	29.3	34.3	29.6		31.7	27.0	37.1	31.4	38.6	36.2	34.6	28.7	-	
DT195	417178	430344	38.8	43.5	34.6	31.6	31.2	28.1	36.9	31.7	40.1	40.9	40.4	34.1	36.0	29.9	-	
DT194	417184	430315	30.5	32.4	31.2	30.1	26.5	27.0	26.1	23.5	31.5	32.8	20.1	29.1	28.4	23.6	-	
DT76	418268	430732	30.4	28.6	30.8	33.0	30.7	24.8	23.8	23.7	31.7	24.5	34.5	28.5	28.8	23.9	-	
DT45	417877	430717	31.7	35.2	29.7	24.9	22.5	21.6	28.7	25.7	30.8	33.3		26.7	28.3	23.5	-	
DT214A	417715	429299	30.4	27.3	23.6	21.9	18.5	19.2	22.0	17.9	25.1	27.7	28.2	20.7	-	-	-	Triplicate Site with DT214A, DT214B and DT214C - Annual data provided for DT214C only
DT214B	417715	429299	25.4	28.1	24.3	22.5	19.8	18.5	22.6	19.6	25.1	27.0	29.9	22.7	-	-	-	Triplicate Site with DT214A, DT214B and DT214C - Annual data provided for DT214C only
DT214C	417715	429299	31.2	28.0	23.7	21.6	19.3	18.8	21.4	19.6	23.8	27.5	31.0	22.3	23.8	19.7	-	Triplicate Site with DT214A, DT214B and DT214C - Annual data provided for DT214C only
DT215A	417708	429380	23.9	22.6	20.2	18.9	15.4	13.9	14.2	14.9	19.4	22.3	25.4	20.8	-	-	-	Triplicate Site with DT215A, DT215B and DT215C - Annual data provided for DT215C only
DT215B	417708	429380		20.6	20.8	18.9	16.0	14.8	14.5	13.8	19.0	21.8	23.6	18.6	-	-	-	Triplicate Site with DT215A, DT215B and DT215C - Annual data provided for DT215C only
DT215C	417708	429380		19.7	20.2	18.1	15.0	14.4	13.0	14.9	18.0	23.9	21.5	21.8	19.0	15.7	-	Triplicate Site with DT215A, DT215B and DT215C - Annual data provided for DT215C only
DT216A	418853	430309	18.1	23.3	18.8	19.4	16.7	15.1	12.5	14.7	20.0	24.4	22.6		-	-	-	Triplicate Site with DT216A, DT216B and DT216C - Annual data provided for DT216C only
DT216B	418853	430309	25.0		21.6	20.2	17.5	14.5	15.5	15.6	18.8	25.3	28.5		-	-	-	Triplicate Site with DT216A, DT216B and DT216C - Annual data provided for DT216C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT216C	418853	430309	25.9		18.6	20.3	17.2	17.4	13.7	15.5	21.3	24.9	26.3		19.9	16.5	-	Triplicate Site with DT216A, DT216B and DT216C - Annual data provided for DT216C only
DT217A	418829	430288	21.2			18.1	15.9	14.5	11.8						-	-	-	Triplicate Site with DT217A, DT217B and DT217C - Annual data provided for DT217C only
DT217B	418829	430288	24.7		19.3	18.3	16.8	13.9	12.2	12.9	18.3	24.8		20.4	-	-	-	Triplicate Site with DT217A, DT217B and DT217C - Annual data provided for DT217C only
DT217C	418829	430288	21.4		19.4	17.3	16.4	12.4	12.8	13.4	18.0	23.2		18.7	17.7	14.7	-	Triplicate Site with DT217A, DT217B and DT217C - Annual data provided for DT217C only
DT88	418829	430399		27.8	24.9	29.5	30.1	26.5	21.8	24.9	30.9	33.9	36.2		28.6	23.8	-	
DT89A	419188	430213	34.3		27.7	31.0	32.7	26.1	29.9	28.5	35.4	32.2	36.1	29.2	-	-	-	Triplicate Site with DT89A, DT89B and DT89C - Annual data provided for DT89C only
DT89B	419188	430213	36.6	36.3	30.1	29.4	31.6	25.7	28.7	27.3	30.9	37.1	32.7	29.3	-	-	-	Triplicate Site with DT89A, DT89B and DT89C - Annual data provided for DT89C only
DT89C	419188	430213	38.7	33.3	30.9	31.2	31.8	28.1	30.2	30.2	33.0	37.2	37.0	32.5	31.9	26.5	-	Triplicate Site with DT89A, DT89B and DT89C - Annual data provided for DT89C only
DT199A	419178	430193	24.2	20.9	23.7	27.2	25.1	20.8	15.8	18.0	21.3	25.0	27.8	22.5	-	-	-	Triplicate Site with DT199A, DT199B and DT199C - Annual data provided for DT199C only
DT199B	419178	430193	29.5	27.3	26.0	28.4	26.1	24.4	12.1	19.1	21.0	26.7	26.5		-	-	-	Triplicate Site with DT199A, DT199B and DT199C - Annual data provided for DT199C only
DT199C	419178	430193	30.6	26.4	27.1	22.2	24.8	23.8	16.0	18.0	20.2	29.9	34.7	27.0	24.0	19.9	-	Triplicate Site with DT199A, DT199B and DT199C - Annual data provided for DT199C only
DT64A	419342	430114	33.4	36.7	35.0	35.9	36.9	33.1	27.7	29.6	34.3	39.5	38.3	31.2	-	-	-	Triplicate Site with DT64A, DT64B and DT64C - Annual data provided for DT64C only
DT64B	419342	430114	32.2	39.1	35.7	36.3	34.3	32.4	29.0	28.3	34.7	38.0	39.9	31.1	-	-	-	Triplicate Site with DT64A, DT64B and DT64C - Annual data provided for DT64C only
DT64C	419342	430114	33.1	35.0	36.5	31.9	33.6	30.5	26.5	29.4	36.0	37.1	39.3	29.2	33.9	28.1	-	Triplicate Site with DT64A, DT64B and DT64C - Annual data provided for DT64C only
DT200A	419328	430099	22.6	21.3	24.1	25.3	21.1	20.4	16.7	17.3	20.7	25.3	31.2	20.5	-	-	-	Triplicate Site with DT200A, DT200B and DT200C - Annual data provided for DT200C only
DT200B	419328	430099	29.9	26.9	25.0	25.1	21.8	21.8	17.6	19.8	25.1	29.6	30.2	20.9	-	-	-	Triplicate Site with DT200A, DT200B and DT200C - Annual data provided for DT200C only
DT200C	419328	430099	30.8	24.9	26.0	24.8	23.3	22.0	17.9	20.4	24.8	26.5	32.9	19.3	23.7	19.7	-	Triplicate Site with DT200A, DT200B and DT200C - Annual data provided for DT200C only
DT220A	419215	431809	23.3	23.0	18.0	17.6		15.5	17.2	16.1	21.4	23.5	27.2	19.3	-	-	-	Triplicate Site with DT220A, DT220B and DT220C - Annual data provided for DT220C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT220B	419215	431809		24.9	20.9	19.4		14.9	16.5	17.8	22.1	25.9	26.4	22.1	-	-	-	Triplicate Site with DT220A, DT220B and DT220C - Annual data provided for DT220C only
DT220C	419215	431809	22.2	26.3	21.4	19.8		15.6	16.2	17.8	21.4	25.5	24.2	22.8	20.9	17.3	-	Triplicate Site with DT220A, DT220B and DT220C - Annual data provided for DT220C only
DT221A	419196	431834	23.7		17.3	18.6		12.5	15.2	13.4	15.2	19.1	26.4	19.6	-	-	-	Triplicate Site with DT221A, DT221B and DT221C - Annual data provided for DT221C only
DT221B	419196	431834	28.5	24.8	21.6	17.7		12.6	14.5	13.4	19.4	19.4	28.8	19.1	-	-	-	Triplicate Site with DT221A, DT221B and DT221C - Annual data provided for DT221C only
DT221C	419196	431834	25.7	23.4	18.9	18.8		12.1			17.2	20.2	28.2	20.5	18.9	15.7	-	Triplicate Site with DT221A, DT221B and DT221C - Annual data provided for DT221C only
DT222A	417861	431486	24.9	23.5	28.0	28.2	25.7	25.0	19.5	21.2	28.6	29.3	33.0	26.0	-	-	-	Triplicate Site with DT222A, DT222B and DT222C - Annual data provided for DT222C only
DT222B	417861	431486	29.2	26.6	26.1		29.3	27.6	19.7	22.8	29.3	32.1		24.0	-	-	-	Triplicate Site with DT222A, DT222B and DT222C - Annual data provided for DT222C only
DT222C	417861	431486	30.9	27.7	28.2	28.0	26.9	26.6	18.8			32.8		23.8	26.9	22.3	-	Triplicate Site with DT222A, DT222B and DT222C - Annual data provided for DT222C only
DT223A	417862	431536	41.8	42.7	41.8	41.7	45.7		38.9	42.2			54.5	39.1	-	-	-	Triplicate Site with DT223A, DT223B and DT223C - Annual data provided for DT223C only
DT223B	417862	431536	40.6	40.9	43.9	46.5			42.1	44.6	61.4		58.8	37.2	-	-	-	Triplicate Site with DT223A, DT223B and DT223C - Annual data provided for DT223C only
DT223C	417862	431536	41.3	44.2	40.9	43.3	44.2		35.5	41.9	53.0		56.2	41.1	44.9	37.3	33.7	Triplicate Site with DT223A, DT223B and DT223C - Annual data provided for DT223C only
DT218A	418292	431290	36.7	38.5	36.6	29.4	31.3	27.7	27.9	30.4	37.0	36.9	37.8	28.2	-	-	-	Triplicate Site with DT218A, DT218B and DT218C - Annual data provided for DT218C only
DT218B	418292	431290	38.8	39.1	40.3	34.9	32.2	32.1	31.3	30.5	33.6	36.9	42.7	33.5	-	-	-	Triplicate Site with DT218A, DT218B and DT218C - Annual data provided for DT218C only
DT218C	418292	431290	38.9	35.5	37.7	35.3	31.5	30.2	29.7	30.6	36.3	32.6	42.1	33.0	34.4	28.5	-	Triplicate Site with DT218A, DT218B and DT218C - Annual data provided for DT218C only
DT219A	418303	431328	29.9	33.6	30.8	26.5	25.0	22.2	23.9	23.0	30.6	29.1	36.8	26.8	-	-	-	Triplicate Site with DT219A, DT219B and DT219C - Annual data provided for DT219C only
DT219B	418303	431328	26.3	33.0	23.9	29.3	25.8	21.4	23.8	23.1	30.4	30.1	34.7	29.2	-	-	-	Triplicate Site with DT219A, DT219B and DT219C - Annual data provided for DT219C only
DT219C	418303	431328	28.6	31.1	31.1	27.9	24.6	22.4	23.5	23.7	29.2	30.7	31.0	26.9	27.8	23.0	-	Triplicate Site with DT219A, DT219B and DT219C - Annual data provided for DT219C only
DT116	418564	432218	24.5	27.7		24.3	21.2	18.6	20.1	18.7	27.0	29.1	31.4	21.5	24.0	19.9	-	
DT118	418666	432470	28.9	29.6	28.3	23.4			23.3	22.2	26.2	27.8	31.4	25.7	26.6	22.1	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT201	418108	432322	40.6	38.8	34.5	31.4	31.0	29.3	24.6	29.5	32.6	36.8	44.6	33.8	33.9	28.2	-	
DT202	418135	432272	28.6	28.6		22.2	23.7	19.2	22.8	22.8	25.1	28.2	27.4	24.8	24.8	20.6	-	
DT203	418345	432366	40.4	34.0	31.2	29.0	27.7	24.3	30.9	26.9	28.5	32.1	38.0	25.3	30.7	25.5	-	
DT160A	418644	432899	35.8	37.8	28.3	25.3	24.0								-	-	-	Triplicate Site with DT160A, DT160B and DT160C - Annual data provided for DT160C only
DT160B	418644	432898	38.8	36.8	30.7	27.3	22.8								-	-	-	Triplicate Site with DT160A, DT160B and DT160C - Annual data provided for DT160C only
DT160C	418644	432898	33.5	34.2	27.6	24.5	22.7	19.0	23.9	23.8		27.5			27.1	22.5	-	Triplicate Site with DT160A, DT160B and DT160C - Annual data provided for DT160C only
DT204A	418640	432870	28.5	30.5	23.5	21.8	21.4	18.8	19.1	19.2	22.7	25.1	30.7	27.0	-	-	-	Triplicate Site with DT204A, DT204B and DT204C - Annual data provided for DT204C only
DT204B	418640	432870	26.0	31.1		24.8	22.5	18.8	18.9	18.6	24.4	26.8	31.4	24.2	-	-	-	Triplicate Site with DT204A, DT204B and DT204C - Annual data provided for DT204C only
DT204C	418640	432870	26.7	29.7	26.8	22.9	21.2	19.0	17.9	19.5	23.6	26.8	31.6	26.2	24.2	20.1	-	Triplicate Site with DT204A, DT204B and DT204C - Annual data provided for DT204C only
DT120A	417991	432926	46.1	44.0	38.2	34.8	32.2	31.8	35.9	32.0	38.5	40.9	43.9	36.8	-	-	-	Triplicate Site with DT120A, DT120B and DT120C - Annual data provided for DT120C only
DT120B	417991	432926	47.6	40.3	38.5	37.6	30.3	28.2	31.6	34.0	39.1	45.5	35.3	32.3	-	-	-	Triplicate Site with DT120A, DT120B and DT120C - Annual data provided for DT120C only
DT120C	417991	432926	36.7	45.2	34.9	34.2	33.8	27.4	33.8	31.6	36.8	38.8	43.4	35.2	36.9	30.6	-	Triplicate Site with DT120A, DT120B and DT120C - Annual data provided for DT120C only
DT209A	417960	432907	40.2	41.7		36.1	34.7	28.1	33.4	31.7	35.8	35.2	37.4	32.9	-	-	-	Triplicate Site with DT209A, DT209B and DT209C - Annual data provided for DT209C only
DT209B	417960	432907	45.6	41.7	35.2	34.1	35.0	35.9	34.4	33.4	39.3	37.2	43.4	41.4	-	-	-	Triplicate Site with DT209A, DT209B and DT209C - Annual data provided for DT209C only
DT209C	417960	432907	44.6				35.6	34.1	33.1	32.3	39.2	42.5	43.0	40.7	37.1	30.8	-	Triplicate Site with DT209A, DT209B and DT209C - Annual data provided for DT209C only
DT205	418597	433111	30.8	34.8	32.8	31.8	29.8	29.4	26.2	26.5	33.7	28.3	34.0	27.6	30.5	25.3	-	
DT206	418579	433109	42.6	38.2	36.2	34.2	28.5	25.6	31.9		36.9	34.3	33.6	31.4	33.9	28.2	-	
DT233	418546	433430	37.8		27.9	33.0	29.6	26.6	29.2	28.2	35.2	32.8	39.0	32.5	32.0	26.5	-	
DT232	418563	433432	31.4	32.9	28.3	27.0	22.2	22.4	25.0	23.6	28.2	30.6	34.6	28.8	27.9	23.2	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT230A	418784	434409	23.0	26.0	20.6	24.3	23.1	18.9	17.2	20.0	25.1	25.3	28.2	25.9	-	-	-	Triplicate Site with DT230A, DT230B and DT230C - Annual data provided for DT230C only
DT230B	418784	434409	30.9	29.7	24.9	23.5	24.6	20.1	21.5	18.9	25.6	28.7	25.1	26.3	-	-	-	Triplicate Site with DT230A, DT230B and DT230C - Annual data provided for DT230C only
DT230C	418784	434409	26.6	28.9	22.9	24.4	23.1	16.4	20.7	18.4	24.5	27.7	24.8	24.0	23.9	19.8	-	Triplicate Site with DT230A, DT230B and DT230C - Annual data provided for DT230C only
DT231A	418791	434424	28.5	25.8	21.1		18.2		18.7	17.4	21.1		21.5	25.1	-	-	-	Triplicate Site with DT231A, DT231B and DT231C - Annual data provided for DT231C only
DT231B	418791	434424	31.6	26.7	18.2		19.3		19.3	17.9	23.1		23.4	24.9	-	-	-	Triplicate Site with DT231A, DT231B and DT231C - Annual data provided for DT231C only
DT231C	418791	434424	27.2	25.4	18.8		18.9		17.6	17.6	20.5		21.2	22.1	21.9	18.2	-	Triplicate Site with DT231A, DT231B and DT231C - Annual data provided for DT231C only
DT5	417982	434886	41.2	39.8	36.8	27.9	27.8	24.3	31.4	27.2	35.3	31.0	38.2	29.6	32.5	27.0	-	
DT39A	417927	434799	30.0		34.9	31.5	29.3	29.6	28.6	28.1	35.9	36.1			-	-	-	Triplicate Site with DT39A, DT39B and DT39C - Annual data provided for DT39C only
DT39B	417927	434799			31.8	31.2	29.3	30.1	27.1	28.1	34.0	36.3	35.2		-	-	-	Triplicate Site with DT39A, DT39B and DT39C - Annual data provided for DT39C only
DT39C	417927	434799			33.3	31.0	28.3	28.9	29.1	27.3	34.0	34.7			31.5	26.1	-	Triplicate Site with DT39A, DT39B and DT39C - Annual data provided for DT39C only
DT208A	417966	434884	28.0	27.2	26.1	26.9	22.7	20.4	18.9	19.4	27.1	25.7	29.3	18.4	-	-	-	Triplicate Site with DT208A, DT208B and DT208C - Annual data provided for DT208C only
DT208B	417966	434884	32.2	28.7	29.8	25.6	24.0	19.2	20.2	19.1	28.8	27.2	30.2	26.8	-	-	-	Triplicate Site with DT208A, DT208B and DT208C - Annual data provided for DT208C only
DT208C	417966	434884	24.8	31.5	30.3	24.9	21.7	17.5	18.6	19.0	23.9	26.8	28.5	22.7	24.8	20.6	-	Triplicate Site with DT208A, DT208B and DT208C - Annual data provided for DT208C only
DT99	418033	434970	27.9	34.8	26.5	26.7	21.7	17.3		27.2					26.0	22.7	-	
DT86	417894	434753	34.0	34.7		23.3	32.7	32.3	30.0	20.1	31.8	35.4	33.2	28.4	30.5	25.3	-	
DT42A	417902	434751	40.2	43.3	37.9	35.3	30.7	31.5	34.9	29.9	29.5	39.6	42.4	35.0	-	-	-	Triplicate Site with DT42A, DT42B and DT42C - Annual data provided for DT42C only
DT42B	417902	434751	41.9	42.7	37.1	34.5	30.5	30.9	36.0	30.8	29.3	40.8	38.8		-	-	-	Triplicate Site with DT42A, DT42B and DT42C - Annual data provided for DT42C only
DT42C	417902	434751	38.4		37.9	35.2	29.1	31.9	35.4	32.2	28.6	39.2	41.1		35.7	29.6	-	Triplicate Site with DT42A, DT42B and DT42C - Annual data provided for DT42C only
DT207A	417912	434759	25.9	30.5	24.2	30.5	26.1	30.1	25.1	23.9	28.7	32.6	27.0	21.8	-	-	-	Triplicate Site with DT207A, DT207B and DT207C - Annual data provided for DT207C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT207B	417912	434759	29.3	32.6	32.3	32.7	26.7	32.9	24.9	24.5	29.8	34.5	32.7		-	-	-	Triplicate Site with DT207A, DT207B and DT207C - Annual data provided for DT207C only
DT207C	417912	434759	26.4		28.4	29.1	25.9	30.3	24.4	22.8	24.7	31.8	28.2	23.7	28.0	23.3	-	Triplicate Site with DT207A, DT207B and DT207C - Annual data provided for DT207C only
DT228A	418090	434429	43.0	44.9	40.4	38.8	35.3	30.6	39.9	36.7	31.5	40.0	37.9	42.5	-	-	-	Triplicate Site with DT228A, DT228B and DT228C - Annual data provided for DT228C only
DT228B	418090	434429	43.9	48.5	39.2	41.3	37.6	32.3	42.4	34.5	33.8	42.5	42.5	38.5	-	-	-	Triplicate Site with DT228A, DT228B and DT228C - Annual data provided for DT228C only
DT228C	418090	434429	46.8	41.1	41.3	40.5	36.8	30.5	41.3	37.3	32.8	36.2	37.9	41.4	39.0	32.3	-	Triplicate Site with DT228A, DT228B and DT228C - Annual data provided for DT228C only
DT229A	418059	434509	27.1	24.3	30.1	31.7	31.3	27.7	17.5	21.3	22.4	29.5	28.6	24.7	-	-	-	Triplicate Site with DT229A, DT229B and DT229C - Annual data provided for DT229C only
DT229B	418059	434509	29.3	28.4	25.5	31.6	32.8	28.7	22.8	23.0	23.9	27.8	31.5	22.7	-	-	-	Triplicate Site with DT229A, DT229B and DT229C - Annual data provided for DT229C only
DT229C	418059	434509	27.1	26.5	27.1	30.2	29.8	27.4	21.3	21.8	24.0	30.1	28.2	23.8	26.7	22.2	-	Triplicate Site with DT229A, DT229B and DT229C - Annual data provided for DT229C only
DT92	419006	437217	31.3	32.5	34.9	32.6	28.1	25.9	25.5	24.7	25.8	33.0	32.0	28.6	29.6	24.5	-	
DT93	419003	437308	31.9	25.9	23.8	25.8	24.4		22.1		21.7	28.3	30.4		26.0	21.6	-	
DT286	419103	437334	31.5	30.1	29.2	25.3	22.6	18.9	23.5	21.7	21.5	28.1	28.4	25.9	25.6	21.2	-	
DT94	419076	437345	24.6	22.6	18.4		15.3	13.2	14.4	13.5	18.7	19.9	22.2	22.8	18.7	15.5	-	
DT273	419138	437213	24.5	23.1	28.0	24.4	24.8	21.4	18.7	20.1	24.9	28.7	32.2	27.4	24.8	20.6	-	
DT274	419107	437314	32.9	35.8	34.1	32.7	24.9	30.9	25.9	25.5	28.4	30.7	35.4	31.1	30.7	25.5	-	
DT275	419317	437551	30.4	34.1	32.1	32.2	26.6	29.8			29.4	31.5	32.3		30.9	25.7	-	
DT276	418979	437969	19.3	14.8	16.8	15.5	13.9	12.3							15.4	12.9	-	
DT305	418640	436130										18.3	19.5		-	-	-	
DT306	418567	436068							11.1	9.5				15.4	12.0	12.7	-	
DT307	418476	436067					9.6	8.7	10.1		12.0	17.8		15.0	12.2	11.7	-	
DT272	417661	433528	29.9	33.5	31.4	30.2	25.7	26.9	25.5	24.6	24.7	29.5	31.7	29.5	28.6	23.7	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT224A	417117	433431	34.0		28.8	27.6	26.2	23.9	26.4	24.0	25.7	31.3	33.3	28.8	-	-	-	Triplicate Site with DT224A, DT224B and DT224C - Annual data provided for DT224C only
DT224B	417117	433431	31.5		29.5	27.8	25.1		26.4	23.7	28.9	30.0	35.5	28.1	-	-	-	Triplicate Site with DT224A, DT224B and DT224C - Annual data provided for DT224C only
DT224C	417117	433431	31.6		28.0	25.6	23.9	24.0	26.2	24.7	27.2	30.2	35.8	29.8	28.1	23.3	-	Triplicate Site with DT224A, DT224B and DT224C - Annual data provided for DT224C only
DT225A	417087	433444	45.2	51.8	38.9	38.0	36.4	32.7	32.7	36.2	31.0	39.7	48.0		-	-	-	Triplicate Site with DT225A, DT225B and DT225C - Annual data provided for DT225C only
DT225B	417087	433444	46.0	49.6	37.2	38.1	36.4	33.9	35.8	35.8	32.8	47.8	47.4	36.9	-	-	-	Triplicate Site with DT225A, DT225B and DT225C - Annual data provided for DT225C only
DT225C	417087	433444	47.7	46.5	40.3	35.9	34.6	31.9	38.4	36.0	29.2	42.1	43.6	39.3	39.2	32.6	-	Triplicate Site with DT225A, DT225B and DT225C - Annual data provided for DT225C only
DT227A	417054	434165	26.6		23.8	26.9	23.9	21.9	21.3	20.7	24.9	26.9	28.6	21.9	-	-	-	Triplicate Site with DT227A, DT227B and DT227C - Annual data provided for DT227C only
DT227B	417054	434165	27.5	30.0	23.9	28.8	23.5	23.1	22.6	19.7	25.8	26.9	30.9	24.2	-	-	-	Triplicate Site with DT227A, DT227B and DT227C - Annual data provided for DT227C only
DT227C	417054	434165	24.8		28.3	28.5	22.5	23.3	20.4	20.6	21.5	27.4	27.4	23.4	25.1	20.8	-	Triplicate Site with DT227A, DT227B and DT227C - Annual data provided for DT227C only
DT123A	414766	437113	39.6	24.2	39.3	40.0	34.7	36.0	31.9	32.3	29.3	38.9	36.5	31.1	34.5	28.6	-	
DT123	414660	436974	35.2	39.0	38.4	36.6	33.4		31.8	34.2	29.4	41.1	41.4	34.1	35.9	29.8	-	
DT124	414620	436924	38.3	39.1	31.7	33.8	32.3	27.7	26.9	30.3	26.9	32.0	38.5		32.5	27.0	-	
DT121	414546	436933	27.2	27.0	24.5	23.2	20.0	15.4	19.4	20.1	23.0	23.9	28.4	24.9	23.1	19.2	-	
DT122	414567	436811	35.5	40.3	37.8	31.7	29.5	28.5	30.6		27.4	32.2	35.7		32.9	27.3	-	
DT126	414643	436505	24.8	20.7	24.3	23.7	19.1	17.3			19.0	23.1	23.0		21.7	18.0	-	
DT125	414674	436471	23.6	23.2	20.4	22.1	17.3	17.1	13.8	15.6	18.9	22.6	24.0	18.0	19.7	16.4	-	
DT127	415044	435558	38.3	39.6	47.1	44.8	43.8	45.7	31.6	35.5	33.8	43.9	42.2	35.4	40.1	33.3	-	
DT128	415331	435796	17.9	15.0	14.7	14.2	10.9	8.9	8.1	10.5	13.6	15.3	18.4	15.3	13.6	11.3	-	
DT130	415839	434674	34.9	38.3	36.3	35.1	30.5	32.6	28.6	29.9	28.3	37.5	43.7	32.6	34.0	28.2	-	
DT132	415717	434265	44.9			36.3	36.5	35.1			38.6	42.2	45.9		39.9	31.9	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT301	415429	434016					16.4	15.3		17.4	23.7	25.8	28.4	26.1	21.9	18.9	-	
DT302	415483	434048						14.5	14.7	14.8	21.9			23.1	17.8	19.0	-	
DT303	415337	434016					18.6	18.0	17.7	17.8	21.7	25.5	29.1	24.4	21.6	19.4	-	
DT304	415447	434047					16.2	16.0	15.5	17.3	21.4	26.2	26.4	23.1	20.3	18.2	-	
DT71 A	415580	434461	39.5	43.0	33.5	33.3	35.0	30.5	32.1	32.9	34.1	36.6	42.9	32.2	-	-	-	Triplicate Site with DT71A, DT71B and DT71C - Annual data provided for DT71C only
DT71 B	415580	434461						30.8	28.8	34.1	36.1	34.3	40.8		-	-	-	Triplicate Site with DT71A, DT71B and DT71C - Annual data provided for DT71C only
DT71 C	415580	434461	39.5			31.1		31.5	30.9	32.7	35.2				35.2	29.2	-	Triplicate Site with DT71A, DT71B and DT71C - Annual data provided for DT71C only
DT278	415570	434477	50.4		43.1	42.0	40.7	41.0		42.5	50.2	43.4	49.9	43.8	44.7	37.1	31.4	
DT172 A	415590	434478	38.6	35.6	29.3	32.6	27.8	23.8	31.9	30.1	37.1	34.7	38.0	33.7	-	-	-	Triplicate Site with DT172A, DT172B and DT172C - Annual data provided for DT172C only
DT172 B	415590	434478	41.7	42.0	35.4	32.8	29.7	25.0	31.7	32.5	36.8	33.1	38.7	36.9	-	-	-	Triplicate Site with DT172A, DT172B and DT172C - Annual data provided for DT172C only
DT172 C	415590	434478	39.4	35.8	33.3	33.9	30.1	25.9	33.0	31.3	38.2	33.4	39.9	29.9	33.7	28.0	-	Triplicate Site with DT172A, DT172B and DT172C - Annual data provided for DT172C only
DT72	415573	434521	52.4	59.4	54.5	59.2	54.1	55.4	45.1	49.2		58.6	54.8	43.3	53.3	**44.2**	-	
DT235 A	415474	434456	41.6	39.4	43.1	44.4	40.6	43.8	34.0	37.1	43.8	44.4	44.0	39.6	-	-	-	Triplicate Site with DT235A, DT235B and DT235C - Annual data provided for DT235C only
DT235 B	415474	434456	39.1	44.7	44.6	46.3	39.0	44.5	35.3	36.6	48.1	46.2	47.4	41.2	-	-	-	Triplicate Site with DT235A, DT235B and DT235C - Annual data provided for DT235C only
DT235 C	415474	434456	34.1	37.7	40.0	45.1	38.6	41.8	29.5	35.9	46.5	44.0	42.8	36.3	41.1	34.1	-	Triplicate Site with DT235A, DT235B and DT235C - Annual data provided for DT235C only
DT156	414781	434126	39.0		41.0	46.2	38.8	34.7	32.9	33.4	43.7	40.8	41.5	39.8	39.2	32.6	-	
DT236	414498	433935	27.8	31.2	30.0	31.4	26.5	23.2	24.6	24.6	30.9	32.8		30.5	28.5	23.6	-	
DT237	414536	433981	32.8	35.7		31.7	30.1	30.8	28.8	27.3	35.6	29.4	34.4	24.9	31.0	25.8	-	
DT288	414404	434137					16.5	16.0	13.4	18.6	21.6	27.1	26.2	22.8	20.3	18.2	-	
DT289	414404	434106					22.3	21.2	16.9	19.8	27.7	27.4	30.8		23.7	21.6	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT290	414385	434168					20.7		16.2	18.6	25.6	27.3	27.8	23.1	22.7	19.5	-	
DT238A	414290	433759	28.7			32.3	27.7	28.1	27.0	27.5	36.3	33.6	34.8		-	-	-	Triplicate Site with DT238A, DT238B and DT238C - Annual data provided for DT238C only
DT238B	414290	433759				33.6		27.6	27.1	28.3	36.5	30.2	33.3	30.6	-	-	-	Triplicate Site with DT238A, DT238B and DT238C - Annual data provided for DT238C only
DT238C	414290	433759			28.6	32.7	26.2	28.4	28.1	28.0	36.2	30.9	34.3	30.5	30.3	25.1	-	Triplicate Site with DT238A, DT238B and DT238C - Annual data provided for DT238C only
DT239A	414268	433765	44.6	45.6	40.1	37.9	33.6	32.2	35.9	36.3	46.3	38.0	41.5	40.1	-	-	-	Triplicate Site with DT239A, DT239B and DT239C - Annual data provided for DT239C only
DT239B	414268	433765	42.0	49.5		39.5	32.9	31.7	37.7	35.0		40.8	40.9	39.6	-	-	-	Triplicate Site with DT239A, DT239B and DT239C - Annual data provided for DT239C only
DT239C	414268	433765	44.0	45.9		37.7	32.7	33.4	38.2	36.7	48.7	40.9	42.8	39.2	39.7	33.0	-	Triplicate Site with DT239A, DT239B and DT239C - Annual data provided for DT239C only
DT139A	414396	433648	36.0	38.3	30.9	31.1	30.5	29.2	30.7	33.4	40.0	38.3	39.1	34.7	-	-	-	Triplicate Site with DT139A, DT139B and DT139C - Annual data provided for DT139C only
DT139B	414396	433648	37.6		34.6	35.5	30.3	30.1	33.8	32.8	41.0	34.7	39.8	37.5	-	-	-	Triplicate Site with DT139A, DT139B and DT139C - Annual data provided for DT139C only
DT139C	414396	433648	37.5	38.7	33.7	34.4	31.0	31.1	31.2	32.8	39.5	39.4	37.8	27.7	34.8	28.9	-	Triplicate Site with DT139A, DT139B and DT139C - Annual data provided for DT139C only
DT240A	414403	433665	49.0	49.9	36.6	40.3	37.8	35.0	35.8	35.7	42.2	45.5	43.2	35.0	-	-	-	Triplicate Site with DT240A, DT240B and DT240C - Annual data provided for DT240C only
DT240B	414403	433665	40.0	44.3	36.2	38.4	36.6	32.8	30.4	34.1	38.2	39.4	41.2	36.0	-	-	-	Triplicate Site with DT240A, DT240B and DT240C - Annual data provided for DT240C only
DT240C	414403	433665	45.9	46.7		37.7		34.2	30.1	34.0	39.3	40.5	39.6	32.8	38.6	32.0	-	Triplicate Site with DT240A, DT240B and DT240C - Annual data provided for DT240C only
DT152	413835	433663	40.3	43.5	42.3	45.4	43.1	41.4	35.0	35.2	43.5	46.9	42.5	33.2	41.0	34.0	-	
DT151A	413700	433687	26.9	36.1	38.2	42.7	35.0	32.8	28.6	29.6	38.3	34.6	34.4	29.6	-	-	-	Triplicate Site with DT151A, DT151B and DT151C - Annual data provided for DT151C only
DT151B	413700	433687	34.7	36.8	39.0	42.6	36.3	31.9	27.9	30.2	37.4	35.0	39.5	29.4	-	-	-	Triplicate Site with DT151A, DT151B and DT151C - Annual data provided for DT151C only
DT151C	413700	433687	31.6	37.3		39.9	35.0	33.0	26.5	26.8	36.2	34.2	36.1	28.0	34.2	28.4	-	Triplicate Site with DT151A, DT151B and DT151C - Annual data provided for DT151C only
DT149A	413750	433573	41.5	36.4	36.6	37.5	35.6	33.1	35.9	36.5	40.0	39.6	41.9	35.3	-	-	-	Triplicate Site with DT149A, DT149B and DT149C - Annual data provided for DT149C only
DT149B	413750	433573	43.1	41.9	38.0	40.0	36.0	33.9	36.2	36.5	39.3	38.0	39.0	37.9	-	-	-	Triplicate Site with DT149A, DT149B and DT149C - Annual data provided for DT149C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT149C	413750	433573	40.6	35.8	36.5	37.6	34.7	30.3	34.5	33.8	39.2	38.6	35.7	36.2	37.3	31.0	-	Triplicate Site with DT149A, DT149B and DT149C - Annual data provided for DT149C only
DT241A	413840	432676	26.3	27.1	30.4	32.6	25.4	26.0	25.6		31.2	32.2	33.3	27.3	-	-	-	Triplicate Site with DT241A, DT241B and DT241C - Annual data provided for DT241C only
DT241B	413840	432676	30.2	31.8	32.1	31.6	26.0	24.6	25.7	27.4	32.1	31.5	33.4	28.7	-	-	-	Triplicate Site with DT241A, DT241B and DT241C - Annual data provided for DT241C only
DT241C	413840	432676	29.7	31.5	30.3	30.3	27.4	25.8	25.7	26.6	32.2	31.9	33.1	24.8	29.1	24.2	-	Triplicate Site with DT241A, DT241B and DT241C - Annual data provided for DT241C only
DT242A	413721	432067	22.0	25.3	24.3	22.9	18.6	17.1	16.2	18.7	21.3	23.3	28.5	22.8	-	-	-	Triplicate Site with DT242A, DT242B and DT242C - Annual data provided for DT242C only
DT242B	413721	432067	26.5	22.7	24.7	24.4	19.6	17.2	16.0	19.1	21.8	27.5	30.5	26.6	-	-	-	Triplicate Site with DT242A, DT242B and DT242C - Annual data provided for DT242C only
DT242C	413721	432067	25.4	26.8	24.3	22.4	18.2	15.7	13.9	17.7	24.3	25.8	21.0	22.4	22.1	18.3	-	Triplicate Site with DT242A, DT242B and DT242C - Annual data provided for DT242C only
DT243A	413729	432097	24.5	31.4	30.3	28.9	26.7		21.6	24.7	26.5	32.8	33.4	22.7	-	-	-	Triplicate Site with DT243A, DT243B and DT243C - Annual data provided for DT243C only
DT243B	413729	432097	28.6	33.0	31.1	27.6	26.6	23.2	22.0	26.3	31.3	29.9		23.3	-	-	-	Triplicate Site with DT243A, DT243B and DT243C - Annual data provided for DT243C only
DT243C	413729	432097	25.1	26.7		29.5	24.8	23.2	21.7	25.4	26.8	30.2	33.4	26.5	27.4	22.8	-	Triplicate Site with DT243A, DT243B and DT243C - Annual data provided for DT243C only
DT244	413225	431373	20.6	23.3	22.3	22.7	18.0	18.9	14.0	16.7	24.2	28.3	25.9	20.6	21.3	17.7	-	
DT245	413243	431386	23.1	22.9	23.9	23.9	16.7	17.8	16.0	16.9	22.7	24.4	25.9	15.6	20.8	17.3	-	
DT246A	414722	432432	37.2	36.4	33.6	28.0	27.1	24.0	27.2	27.5	36.7	34.6		26.0	-	-	-	Triplicate Site with DT246A, DT246B and DT246C - Annual data provided for DT246C only
DT246B	414722	432432	35.8	34.1	34.7	32.2	28.0	26.0	30.0	29.1	35.7	35.3		32.2	-	-	-	Triplicate Site with DT246A, DT246B and DT246C - Annual data provided for DT246C only
DT246C	414722	432432	37.0	34.2	33.9	31.6	27.6	25.4	27.7	26.4	35.8	33.1		32.9	31.4	26.1	-	Triplicate Site with DT246A, DT246B and DT246C - Annual data provided for DT246C only
DT247A	414731	432443	28.2	30.5	30.8	33.0		29.4	19.6	23.3	29.4	31.5	31.9	25.5	-	-	-	Triplicate Site with DT247A, DT247B and DT247C - Annual data provided for DT247C only
DT247B	414731	432443	27.6	30.5	31.9	32.9		30.6	21.5	24.7	30.9	33.3	34.8	26.4	-	-	-	Triplicate Site with DT247A, DT247B and DT247C - Annual data provided for DT247C only
DT247C	414731	432443	28.2	31.4		31.2		29.3	20.4	23.8	30.1	30.7	29.1	23.2	28.7	23.8	-	Triplicate Site with DT247A, DT247B and DT247C - Annual data provided for DT247C only
DT144A	414908	432312	33.3	34.2	37.7	38.9	35.1	36.0	27.2	31.2	38.4	34.6	39.0	29.3	-	-	-	Triplicate Site with DT144A, DT144B and DT144C - Annual data provided for DT144C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT144B	414908	432312	36.7	36.6	36.3	38.7	34.2	36.7	30.6		40.1	39.3	34.3	31.2	-	-	-	Triplicate Site with DT144A, DT144B and DT144C - Annual data provided for DT144C only
DT144C	414908	432312	36.3	36.7	39.5	41.6	34.8	36.5	29.6	32.8	37.9	38.8	39.9	32.6	35.5	29.5	-	Triplicate Site with DT144A, DT144B and DT144C - Annual data provided for DT144C only
DT146	415005	432231	30.9	31.3			24.0	20.3	19.1	22.9	27.0	30.8	35.0	24.3	26.6	22.0	-	
DT143A	414902	432251	41.2	49.6	45.6	48.9	44.5	43.5	36.1		46.8		46.7	40.4	-	-	-	Triplicate Site with DT143A, DT143B and DT143C - Annual data provided for DT143C only
DT143B	414902	432251	39.0	50.6	47.6	47.3	46.4	42.8	37.2	38.9	47.4		45.5	36.8	-	-	-	Triplicate Site with DT143A, DT143B and DT143C - Annual data provided for DT143C only
DT143C	414902	432251	41.7	50.5		49.0	46.0	44.5	38.1	40.0	48.5		46.7	41.4	44.1	36.6	-	Triplicate Site with DT143A, DT143B and DT143C - Annual data provided for DT143C only
DT142	414724	432095	36.4	38.5	40.2	39.5	41.0	34.3	29.5	34.0	35.6	38.1	41.7	27.5	36.4	30.2	-	
DT248	414499	431676	31.8		32.1	31.3	30.7	30.0	25.2	31.9	32.2	37.9	40.5	27.8	32.0	26.5	-	
DT249A	414862	431173								29.5	36.6	38.2	36.4		-	-	-	Triplicate Site with DT249A, DT249B and DT249C - Annual data provided for DT249C only
DT249B	414862	431173								29.5		38.2	38.3		-	-	-	Triplicate Site with DT249A, DT249B and DT249C - Annual data provided for DT249C only
DT249C	414862	431173								29.2	33.5	38.2	35.4		34.8	26.9	-	Triplicate Site with DT249A, DT249B and DT249C - Annual data provided for DT249C only
DT250A	414788	431184	21.9		27.4			27.9		23.9	23.1	29.2	33.8	23.0	-	-	-	Triplicate Site with DT250A, DT250B and DT250C - Annual data provided for DT250C only
DT250B	414788	431184	29.9			32.3		26.0		24.7	26.6	35.4	33.1	24.3	-	-	-	Triplicate Site with DT250A, DT250B and DT250C - Annual data provided for DT250C only
DT250C	414788	431184	23.3		28.9	29.6		28.2		24.8	27.2	33.0	33.5	19.9	27.8	23.1	-	Triplicate Site with DT250A, DT250B and DT250C - Annual data provided for DT250C only
DT252A	415228	431031	33.9	41.0	35.5	34.8	35.6	29.4	28.5	33.9	39.0	41.4	38.6	29.6	-	-	-	Triplicate Site with DT252A, DT252B and DT252C - Annual data provided for DT252C only
DT252B	415228	431031	36.7	38.7	37.6	36.4	35.7	30.6	33.5	36.5	37.7	41.2	43.5	33.4	-	-	-	Triplicate Site with DT252A, DT252B and DT252C - Annual data provided for DT252C only
DT252C	415228	431031	39.8	37.8	34.0	34.5	30.4	28.9	30.5	31.9	32.6	39.5	41.3	28.6	35.3	29.3	-	Triplicate Site with DT252A, DT252B and DT252C - Annual data provided for DT252C only
DT251A	415222	431010	30.3	29.1	27.6	30.5	30.1	26.9	23.3	24.9	28.6	35.3	33.3	24.0	-	-	-	Triplicate Site with DT251A, DT251B and DT251C - Annual data provided for DT251C only
DT251B	415222	431010	31.3	29.8	30.3	30.7	32.6	27.9	24.5	26.7	27.4	33.6	34.3	29.1	-	-	-	Triplicate Site with DT251A, DT251B and DT251C - Annual data provided for DT251C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT251C	415222	431010	26.4	29.3	26.4	31.1	31.0	24.8	23.4	25.0	27.1		32.5	23.1	28.8	23.9	-	Triplicate Site with DT251A, DT251B and DT251C - Annual data provided for DT251C only
DT253A	415320	430090	33.3	34.6	33.1				18.8	27.5	33.0	36.7	35.6	16.3	-	-	-	Triplicate Site with DT253A, DT253B and DT253C - Annual data provided for DT253C only
DT253B	415320	430090	35.8	19.9	34.2			33.1	20.8	28.4	32.4	37.5	36.1	25.0	-	-	-	Triplicate Site with DT253A, DT253B and DT253C - Annual data provided for DT253C only
DT253C	415320	430090	32.1	31.7					21.4	26.9	32.0	36.9	35.3	22.4	30.4	25.2	-	Triplicate Site with DT253A, DT253B and DT253C - Annual data provided for DT253C only
DT254A	414637	430131	26.9	26.8	23.9	23.2	22.6	15.3	13.7	18.8	22.4	25.2	26.4	18.3	-	-	-	Triplicate Site with DT254A, DT254B and DT254C - Annual data provided for DT254C only
DT254B	414637	430131	24.5	28.7	24.5	24.9	21.0	15.2	18.9	20.1	24.0	24.8	28.4	16.6	-	-	-	Triplicate Site with DT254A, DT254B and DT254C - Annual data provided for DT254C only
DT254C	414637	430131	26.7	27.3	25.9	24.2	22.7	16.6	19.3	18.6	23.3	24.5	24.7	19.5	22.5	18.6	-	Triplicate Site with DT254A, DT254B and DT254C - Annual data provided for DT254C only
DT255A	414629	430122		22.8	23.6	26.4	22.7	21.6	17.4	19.5		29.3		20.9	-	-	-	Triplicate Site with DT255A, DT255B and DT255C - Annual data provided for DT255C only
DT255B	414629	430122	25.1		25.1	27.7	23.3		16.0	20.1	24.4	27.5	23.0	20.9	-	-	-	Triplicate Site with DT255A, DT255B and DT255C - Annual data provided for DT255C only
DT255C	414629	430122			22.6	24.5	24.3	22.1	14.0	19.3	22.1	25.9	26.2	18.7	22.8	19.0	-	Triplicate Site with DT255A, DT255B and DT255C - Annual data provided for DT255C only
DT257A	414260	430531	16.2	18.8	20.0	18.6	15.4	13.9	11.6	13.7	18.7	25.2	23.1	20.4	-	-	-	Triplicate Site with DT257A, DT257B and DT257C - Annual data provided for DT257C only
DT257B	414260	430531	20.8	22.9	22.2	21.0	16.2	14.6	13.8	13.9	21.5	24.6	21.7	18.3	-	-	-	Triplicate Site with DT257A, DT257B and DT257C - Annual data provided for DT257C only
DT257C	414260	430531	18.4	22.2	19.9	20.7	14.3	14.2	13.5	14.9	19.6	23.7	23.4	18.5	18.6	15.5	-	Triplicate Site with DT257A, DT257B and DT257C - Annual data provided for DT257C only
DT256A	414239	430526	15.8	17.7	15.9	18.9	11.8	11.7	10.5	11.0	14.6	20.3	20.5	15.9	-	-	-	Triplicate Site with DT256A, DT256B and DT256C - Annual data provided for DT256C only
DT256B	414239	430526	19.5	17.7	18.6	17.3		12.2	10.0	11.4	17.0	18.3	24.0	15.3	-	-	-	Triplicate Site with DT256A, DT256B and DT256C - Annual data provided for DT256C only
DT256C	414239	430526	15.8	20.9	16.9	18.9		12.7	10.5	11.4	15.3	22.7	23.3	19.2	16.0	13.3	-	Triplicate Site with DT256A, DT256B and DT256C - Annual data provided for DT256C only
DT283	410565	430351	25.5	29.2	25.9	20.0	18.9	17.1	16.1	15.7	24.0	23.4	22.5	23.5	21.8	18.1	-	
DT284	410585	430112	18.0	26.9	26.2	22.1	21.9	22.6	14.7	19.6	23.8	25.5	19.9	20.9	21.8	18.1	-	
DT285	410075	430120	13.2	19.1	18.7	19.9	16.7	17.7	9.8	13.6	15.7	21.1	19.7		16.8	14.0	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT259A	413785	430386	24.0	27.9	20.3	25.5	21.2	20.2	19.3	18.9	22.5	23.5	26.2	20.9	-	-	-	Triplicate Site with DT259A, DT259B and DT259C - Annual data provided for DT259C only
DT259B	413785	430386	26.6	23.1	26.6	23.9	20.3	20.0	19.0	19.3	25.8	29.2	26.3		-	-	-	Triplicate Site with DT259A, DT259B and DT259C - Annual data provided for DT259C only
DT259C	413785	430386	26.0	27.5	25.5	26.0	21.8	19.5	19.1	20.9	25.1	30.4	24.7	21.5	23.3	19.4	-	Triplicate Site with DT259A, DT259B and DT259C - Annual data provided for DT259C only
DT258A	413749	430389	24.5	23.6	24.5	22.0	21.1	20.5	17.9	18.8	24.5	25.6	24.5		-	-	-	Triplicate Site with DT258A, DT258B and DT258C - Annual data provided for DT258C only
DT258B	413749	430389	24.9	25.2	22.1	25.1	23.4		17.2	19.8	22.1	26.6	29.4		-	-	-	Triplicate Site with DT258A, DT258B and DT258C - Annual data provided for DT258C only
DT258C	413749	430389	23.1	24.8	23.2	26.6	22.5	20.4	15.3	19.4	20.5	29.4	27.9		22.9	19.0	-	Triplicate Site with DT258A, DT258B and DT258C - Annual data provided for DT258C only
DT298	413814	429468					11.2	10.9	8.4	10.3	15.8		20.4	14.8	13.1	12.2	-	
DT299	413832	429561					10.4	9.4	8.5	8.1	14.4	18.6	16.3	15.4	12.6	11.3	-	
DT261A	415339	429334	21.2	21.4	16.4	16.3	11.8	11.0	11.0	12.3	16.5	18.5	21.5	18.9	-	-	-	Triplicate Site with DT261A, DT261B and DT261C - Annual data provided for DT261C only
DT261B	415339	429334	18.2	19.2	16.2	17.3	13.3	11.1	10.9	11.6	17.1	21.5	23.0	16.1	-	-	-	Triplicate Site with DT261A, DT261B and DT261C - Annual data provided for DT261C only
DT261C	415339	429334	19.1	17.6	16.7	17.7	11.4	11.8	11.2	12.5	16.9	20.0	20.9	18.4	16.3	13.5	-	Triplicate Site with DT261A, DT261B and DT261C - Annual data provided for DT261C only
DT260A	415368	429297	19.0	20.0	13.6	15.4	12.1	11.9	9.8	12.2	15.4	21.6	22.0	16.5	-	-	-	Triplicate Site with DT260A, DT260B and DT260C - Annual data provided for DT260C only
DT260B	415368	429297	20.2		16.8	15.1	13.1	12.4	9.9	11.6	16.3	20.9	19.5	17.5	-	-	-	Triplicate Site with DT260A, DT260B and DT260C - Annual data provided for DT260C only
DT260C	415368	429297	17.8		15.6	15.6	12.6	11.4	9.7	11.3	15.9	19.8	20.9	17.0	15.8	13.1	-	Triplicate Site with DT260A, DT260B and DT260C - Annual data provided for DT260C only
DT262A	415894	429519		30.2	30.4	28.4	27.2	23.6	26.9	27.9	36.6	30.9	32.1	29.1	-	-	-	Triplicate Site with DT262A, DT262B and DT262C - Annual data provided for DT262C only
DT262B	415894	429519		38.3	30.6	30.0	26.8	24.4	26.1	28.5	36.4	34.3	38.1		-	-	-	Triplicate Site with DT262A, DT262B and DT262C - Annual data provided for DT262C only
DT262C	415894	429519		38.6	29.0	29.3	27.5	23.1	26.8	27.2	33.8	28.6	35.3	31.5	30.2	25.1	-	Triplicate Site with DT262A, DT262B and DT262C - Annual data provided for DT262C only
DT133	416260	434581	35.8	37.1	35.9		29.5	27.5	30.3	29.5	37.1	35.8	39.0	35.0	33.9	28.1	-	
DT111A	416015	435028	43.1	39.7	37.8	36.8	35.2	32.0	29.7	31.7	35.6	36.4	43.4	26.7	-	-	-	Triplicate Site with DT111A, DT111B and DT111C - Annual data provided for DT111C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT111B	416015	435028	39.3	40.7	39.3	36.5	36.3	35.2	28.7	33.7	37.6	39.5	43.5	33.7	-	-	-	Triplicate Site with DT111A, DT111B and DT111C - Annual data provided for DT111C only
DT111C	416015	435028	36.7	38.9	38.4	35.3	36.2	35.1	31.0	33.1	39.3	34.8	39.4	36.0	36.3	30.1	-	Triplicate Site with DT111A, DT111B and DT111C - Annual data provided for DT111C only
DT234A	416019	434990	40.1	39.7	37.8	29.0	30.6	31.3	29.1	32.5	39.5	38.7	39.7	34.4	-	-	-	Triplicate Site with DT234A, DT234B and DT234C - Annual data provided for DT234C only
DT234B	416019	434990	39.3	43.0	40.8	36.7	31.5	32.4	31.7	32.1	43.5	37.4	41.8	36.8	-	-	-	Triplicate Site with DT234A, DT234B and DT234C - Annual data provided for DT234C only
DT234C	416019	434990	38.9	37.6	34.6	32.5	29.7	29.6	28.4	30.9	35.8	35.4		34.6	35.5	29.5	-	Triplicate Site with DT234A, DT234B and DT234C - Annual data provided for DT234C only
DT73A	415438	435834	47.1	47.1	45.5	45.2	41.7	41.2	36.3	39.5	44.6	45.0	45.3	40.4	-	-	-	Triplicate Site with DT73A, DT73B and DT73C - Annual data provided for DT73C only
DT73B	415438	435834	42.2	46.1	46.6	47.2	43.9	42.5	33.9	38.8	41.7	41.3	43.4	37.4	-	-	-	Triplicate Site with DT73A, DT73B and DT73C - Annual data provided for DT73C only
DT73C	415438	435834	41.3	42.9	42.2	42.9	41.5		33.2	37.7	41.6	39.9	50.6	38.9	42.2	35.0	-	Triplicate Site with DT73A, DT73B and DT73C - Annual data provided for DT73C only
DT173A	415442	435799	34.3	36.9	38.0	35.8		29.6	31.3	32.0		36.1	35.6		-	-	-	Triplicate Site with DT173A, DT173B and DT173C - Annual data provided for DT173C only
DT173B	415442	435799	30.9	34.6	36.3	34.4		32.6	32.2	34.0		36.6	40.8		-	-	-	Triplicate Site with DT173A, DT173B and DT173C - Annual data provided for DT173C only
DT173C	415442	435799	32.1	34.0	38.0	36.1			31.1	34.4		36.6	39.2		31.2	25.9	-	Triplicate Site with DT173A, DT173B and DT173C - Annual data provided for DT173C only
DT74	415549	435918	19.4	21.5		16.8	13.3	12.6	13.9	13.6	18.6	19.2	24.5	21.4	17.7	14.7	-	
DT129	415089	436637	31.9	34.7	29.4	29.1	32.9	27.1	25.5	30.1	31.7	29.0	39.3	23.8	30.4	25.2	-	
DT112A	415024	436743	27.8	31.6	31.1	28.4	22.4	21.4	22.2	24.9	25.8	27.9	32.9	28.9	-	-	-	Triplicate Site with DT112A, DT112B and DT112C - Annual data provided for DT112C only
DT112B	415024	436743	30.2	29.8	31.3	28.3	23.0	22.3	21.8	24.1	29.4	31.1	30.4	30.2	-	-	-	Triplicate Site with DT112A, DT112B and DT112C - Annual data provided for DT112C only
DT112C	415024	436743	33.6	32.8	32.4	29.4	24.8	23.9	23.9	25.5	29.1	30.5	34.9	30.8	28.0	23.3	-	Triplicate Site with DT112A, DT112B and DT112C - Annual data provided for DT112C only
DT174A	415029	436771	27.6	31.3	29.7	28.0	21.2	20.4	19.3	20.9	24.2	27.3	32.0	27.0	-	-	-	Triplicate Site with DT174A, DT174B and DT174C - Annual data provided for DT174C only
DT174B	415029	436771	29.4	32.4	29.9	28.3	21.5	22.2	19.5	19.6	24.6	25.2	30.2	26.9	-	-	-	Triplicate Site with DT174A, DT174B and DT174C - Annual data provided for DT174C only
DT174C	415029	436771	27.7	27.0	28.5	26.3	19.4	20.3	18.8	20.0	25.8	26.1	29.8	24.6	25.4	21.0	-	Triplicate Site with DT174A, DT174B and DT174C - Annual data provided for DT174C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT131	414856	437605	50.8	52.5	44.8	41.0	38.0	31.0	39.8				38.9	32.4	**41.0**	34.1	-	
DT269	413900	437738	21.3	25.2	23.7	20.1	18.5	18.4	14.8	16.9	20.9	24.8	26.7		21.0	17.4	-	
DT91 A	413697	437723	36.2	36.9		28.3	26.0	27.3	27.7	28.3	33.3	27.7	39.1	28.1	-	-	-	Triplicate Site with DT91A, DT91B and DT91C - Annual data provided for DT91C only
DT91 B	413697	437723	39.1	33.9	38.4	33.1	30.9	26.9	24.6	29.6	32.9	35.9	35.5	32.5	-	-	-	Triplicate Site with DT91A, DT91B and DT91C - Annual data provided for DT91C only
DT91 C	413697	437723	37.8	37.2	36.7	31.8	28.7	27.7	26.5	26.9	31.5	33.1	35.2	32.8	32.1	26.6	-	Triplicate Site with DT91A, DT91B and DT91C - Annual data provided for DT91C only
DT175 A	413709	437745	37.9	37.9	34.7	31.7	29.5	26.4	27.6	28.1	31.2	30.8	35.6	34.2	-	-	-	Triplicate Site with DT175A, DT175B and DT175C - Annual data provided for DT175C only
DT175 B	413709	437745	41.2	39.7	35.6	32.3	30.1	26.3	27.7	28.4	34.2	34.1	35.6	35.1	-	-	-	Triplicate Site with DT175A, DT175B and DT175C - Annual data provided for DT175C only
DT175 C	413709	437745	37.0	38.2	34.6	30.3	28.1	27.3	26.4	28.8	32.7	30.1	35.4	33.3	32.4	26.9	-	Triplicate Site with DT175A, DT175B and DT175C - Annual data provided for DT175C only
DT30 A	413861	437772	38.8	38.5	39.1	32.3	30.0	28.3	29.7	27.6	33.8	27.4		31.8	-	-	-	Triplicate Site with DT30A, DT30B and DT30C - Annual data provided for DT30C only
DT30 B	413861	437772	36.0	37.8	38.1	35.1		30.9	26.9	26.9	32.8	37.1			-	-	-	Triplicate Site with DT30A, DT30B and DT30C - Annual data provided for DT30C only
DT30 C	413861	437772	37.5	37.3	38.3	30.3		27.1	28.3	27.8	33.9	35.7			32.7	27.1	-	Triplicate Site with DT30A, DT30B and DT30C - Annual data provided for DT30C only
DT180 A	413856	437784	30.7	30.0	29.5	24.1	19.8	18.9	19.0	20.4	24.9	28.5	32.3	28.2	-	-	-	Triplicate Site with DT180A, DT180B and DT180C - Annual data provided for DT180C only
DT180 B	413856	437784	29.2	31.0	28.9	24.8	19.2		21.8	19.9	24.4	24.5	28.6	27.9	-	-	-	Triplicate Site with DT180A, DT180B and DT180C - Annual data provided for DT180C only
DT180 C	413856	437784	30.7	28.5	27.5	23.2	19.6	16.6	17.8	19.0	23.4	27.8	31.4	27.2	24.9	20.7	-	Triplicate Site with DT180A, DT180B and DT180C - Annual data provided for DT180C only
DT49 A	413600	437653	24.7	29.5	27.1	25.4	24.4	22.2		22.3	24.8	27.0	26.8	24.4	-	-	-	Triplicate Site with DT49A, DT49B and DT49C - Annual data provided for DT49C only
DT49 B	413600	437653	28.4	27.3		25.6		20.2	20.5	21.8	27.6	28.0	28.2	22.4	-	-	-	Triplicate Site with DT49A, DT49B and DT49C - Annual data provided for DT49C only
DT49 C	413600	437653	27.9	32.1		26.3	25.4	23.8	20.2	22.9	23.6	27.0	30.8	22.6	25.3	21.0	-	Triplicate Site with DT49A, DT49B and DT49C - Annual data provided for DT49C only
DT176 A	413597	437628	22.0	25.2		24.3	21.5	20.2	17.4	19.1	23.4	25.0	25.1	21.7	-	-	-	Triplicate Site with DT176A, DT176B and DT176C - Annual data provided for DT176C only
DT176 B	413597	437628	24.4	26.4	24.6	25.0	21.8	21.2	17.5	18.7	21.9	26.1	28.7	22.0	-	-	-	Triplicate Site with DT176A, DT176B and DT176C - Annual data provided for DT176C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT176C	413597	437628	23.3	26.2	24.4	22.9	19.1	20.1	17.6	18.9	21.4	22.6	25.9	22.2	22.6	18.7	-	Triplicate Site with DT176A, DT176B and DT176C - Annual data provided for DT176C only
DT50	413510	437732	48.0			41.2		35.8	31.7		41.0			35.5	38.9	35.2	-	
DT177A	413501	437732	34.4	41.5		34.8	32.8	34.3	25.4	31.9	33.9	37.1	38.2	27.3	-	-	-	Triplicate Site with DT177A, DT177B and DT177C - Annual data provided for DT177C only
DT177B	413501	437732	38.7	44.4	37.0	39.0	38.9		28.9	31.5	36.3	37.6	43.4	31.7	-	-	-	Triplicate Site with DT177A, DT177B and DT177C - Annual data provided for DT177C only
DT177C	413501	437732	39.6	45.0	36.2	38.1	35.0	33.5	27.7	32.5	31.7	40.4	44.1	30.7	35.7	29.6	-	Triplicate Site with DT177A, DT177B and DT177C - Annual data provided for DT177C only
DT31	413527	437713	50.2	54.5	49.2	44.6	46.1	44.1	42.4	41.8	51.4	46.8	51.1		47.5	39.4	28.7	
DT101A	413418	437725							26.6			41.2	47.1		-	-	-	Triplicate Site with DT101A, DT101B and DT101C - Annual data provided for DT101C only
DT101B	413418	437725		45.2	35.4	40.7	39.9			29.4			46.5	36.3	-	-	-	Triplicate Site with DT101A, DT101B and DT101C - Annual data provided for DT101C only
DT101C	413418	437725	41.5	44.4	40.5	34.5	39.4		24.8		33.5	41.1	42.5	29.3	37.2	30.9	-	Triplicate Site with DT101A, DT101B and DT101C - Annual data provided for DT101C only
DT179A	413417	437708	35.5	31.3		38.0	28.4			28.3	39.0	39.7	34.4	30.6	-	-	-	Triplicate Site with DT179A, DT179B and DT179C - Annual data provided for DT179C only
DT179B	413417	437708	37.5	35.6		38.3	33.8		32.9	27.8	40.4	41.7	39.1	33.1	-	-	-	Triplicate Site with DT179A, DT179B and DT179C - Annual data provided for DT179C only
DT179C	413417	437708	37.9	34.6	36.6	37.9	32.3			27.1	41.4	36.8	38.6		35.1	29.2	-	Triplicate Site with DT179A, DT179B and DT179C - Annual data provided for DT179C only
DT102A	413338	437720	31.6	38.2	31.7	32.1	32.2	31.3	24.2	25.0	26.2	34.4	35.6	29.8	-	-	-	Triplicate Site with DT102A, DT102B and DT102C - Annual data provided for DT102C only
DT102B	413338	437720	37.4	36.6	30.9	32.9	31.7	31.2	25.2	25.6	29.0	34.5	37.6	31.5	-	-	-	Triplicate Site with DT102A, DT102B and DT102C - Annual data provided for DT102C only
DT102C	413338	437720	34.5	37.4		31.6	31.9	30.1	25.1	26.7	30.6	36.4	34.4	30.1	31.6	26.2	-	Triplicate Site with DT102A, DT102B and DT102C - Annual data provided for DT102C only
DT178A	413334	437703	33.1		33.5	38.5	32.8	32.8	26.3		30.4	37.8	38.2	31.5	-	-	-	Triplicate Site with DT178A, DT178B and DT178C - Annual data provided for DT178C only
DT178B	413334	437703	33.2	34.4	31.1	40.4	33.2	33.7	24.4	32.5	30.2	40.2	35.1	30.0	-	-	-	Triplicate Site with DT178A, DT178B and DT178C - Annual data provided for DT178C only
DT178C	413334	437703	32.7	33.6	33.2	38.7	31.5	33.1	26.4		28.7	39.7	35.4	30.8	33.2	27.6	-	Triplicate Site with DT178A, DT178B and DT178C - Annual data provided for DT178C only
DT270	413719	437665	43.4	41.4	39.5	36.3	34.1	32.3	35.8	36.0	39.0	36.2	46.3	33.5	37.8	31.4	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT271	413723	437678	47.2	47.9	34.0	46.1	46.0	37.8	30.5	33.9	40.4	42.8	49.6	37.9	41.2	34.2	-	
DT287	409851	441883	17.0	16.6	12.0	14.1	10.5	9.3	10.3	10.0	11.8	14.7	16.9	15.4	13.2	11.0	-	
DT78	407380	441811		23.3	22.3	15.4	15.7		16.5	16.8	19.1	22.8	28.0	20.0	20.0	16.6	-	
DT68	406060	441274	24.0	25.6	29.3	27.9	22.4	20.1	18.5	19.8	23.6	24.3	29.9	25.7	-	-	-	Triplicate Site with DT68, DT69 and DT70 - Annual data provided for DT70 only
DT69	406060	441274	28.4	26.7	28.7	25.1	20.7	18.9	17.7	18.6	22.9	23.1	28.0	23.2	-	-	-	Triplicate Site with DT68, DT69 and DT70 - Annual data provided for DT70 only
DT70	406060	441274	29.8	28.2	29.1	26.9	22.3	15.6	17.3	19.1	23.1	25.5	29.5	22.8	24.0	19.9	-	Triplicate Site with DT68, DT69 and DT70 - Annual data provided for DT70 only
DT190	406495	441280	37.2	39.3	28.5	27.2	26.8	24.6	23.9	46.7		31.2	40.1	34.2	32.7	27.1	-	
DT191	406508	441310	59.8	60.4		55.0		47.1			56.3	56.3	59.5	48.9	55.4	**42.0**	-	
DT21	404719	440613	12.6	12.3	10.5			5.6	6.0	6.4	7.8	12.6	13.7	10.6	9.8	8.1	-	
DT134	406940	441922	46.3	43.9	39.0	37.4	36.9	32.9	34.5	31.6	41.9	40.5	42.8	36.2	38.7	32.1	-	
DT135	406582	442028	41.3	32.9	31.8	31.4	30.6	26.1	27.7	27.1	32.0	35.8	32.6	30.7	31.7	26.3	-	
DT136	406540	442038	45.3	37.4	34.1	30.6	32.6	29.0	27.7	31.2	33.0	38.2	41.4	35.2	34.6	28.8	-	
DT137	406475	442046	47.2	42.7	38.4	39.4	40.3	33.7	33.5	34.1	38.4	41.0	47.0	34.0	39.1	32.5	-	
DT138	406255	442140	44.6	41.6	37.3	42.8	41.2	37.2	34.7	34.9	41.7	40.6	44.9	30.6	39.3	32.6	-	
DT282	404458	446757	34.5	33.0		29.0	26.3	25.6	24.3	24.8	29.6	29.2	27.9	26.2	28.2	23.4	-	
DT263	411245	447863	16.8	21.0	19.2	20.6	16.4	15.5	13.0	14.7	14.6	20.5	22.9	16.4	17.6	14.6	-	
DT264	411600	447618	18.4	15.3	17.1	18.0	13.5	13.8	10.8	12.6	15.1	19.5	21.1	15.7	15.9	13.2	-	
DT265	411782	447598	27.3	26.3	26.8	24.3	18.1	19.9	18.9	18.4	24.1		31.2	24.8	23.6	19.6	-	
DT266	411704	447666	26.5	22.1	24.4	24.9	19.5	19.0	20.0	19.2	22.3	24.9	27.6	23.2	22.8	18.9	-	
DT267	411786	447811	28.7	31.6	29.3	29.4	25.9	22.0	19.4	21.8	24.7	27.4	32.4	19.9	26.0	21.6	-	
DT268	411873	447807	22.5	27.3	21.9	29.6		22.9		20.8	19.3	31.2	27.9	21.1	24.5	20.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT293	415950	431453									18.3	24.4	29.6	24.0	24.3	17.4	-	
DT294	415950	431453					23.1	19.3	24.7	25.1	21.9	30.8	36.9	28.1	26.2	23.5	-	
DT308	415932	431360						17.0	19.3	21.1	22.7	28.1		23.7	21.6	21.3	-	
DT103A	415925	430572	37.0	46.5	41.5	37.6		36.7		32.3	29.6	38.5	41.0	29.0	-	-	-	Triplicate Site with DT103A, DT103B and DT103C - Annual data provided for DT103C only
DT103B	415925	430572	39.9	42.7	40.7	43.5		40.4	29.4	35.3	23.3	44.1		24.1	-	-	-	Triplicate Site with DT103A, DT103B and DT103C - Annual data provided for DT103C only
DT103C	415925	430572	38.2	48.2	39.9	46.4	39.0		29.8	34.0	26.2	42.3	43.5	30.2	37.2	30.8	-	Triplicate Site with DT103A, DT103B and DT103C - Annual data provided for DT103C only
DT104A	415961	430558	40.8	51.5	40.5	44.3	40.6	34.3	34.5	38.5	26.9	43.7	43.8	31.7	-	-	-	Triplicate Site with DT104A, DT104B and DT104C - Annual data provided for DT104C only
DT104B	415961	430558	46.4	50.0	42.2	44.8	41.2	35.0	34.9	37.8	28.1	42.8	47.3	33.9	-	-	-	Triplicate Site with DT104A, DT104B and DT104C - Annual data provided for DT104C only
DT104C	415961	430558	36.5	49.8	41.4	41.8	41.4	35.8	33.8	38.7	27.7	45.2	44.2	29.1	39.3	32.7	-	Triplicate Site with DT104A, DT104B and DT104C - Annual data provided for DT104C only
DT188A	415979	430522	26.1	28.9	31.3	30.9	32.1	27.5	18.9	27.5	19.2	39.0	39.7		-	-	-	Triplicate Site with DT188A, DT188B and DT188C - Annual data provided for DT188C only
DT188B	415979	430522	36.5	37.2	30.5	32.3	35.0	28.9	23.0	28.0	19.9	37.6	41.9		-	-	-	Triplicate Site with DT188A, DT188B and DT188C - Annual data provided for DT188C only
DT188C	415979	430522	29.5	38.4	28.6	25.6	31.7	28.1	18.7	28.7	11.9	40.2	38.8	25.9	29.6	24.6	-	Triplicate Site with DT188A, DT188B and DT188C - Annual data provided for DT188C only
DT189A	415910	430551	36.6	35.3	25.6	32.6	32.5	27.5	22.6	30.7	20.1	38.4	34.2	26.6	-	-	-	Triplicate Site with DT189A, DT189B and DT189C - Annual data provided for DT189C only
DT189B	415910	430551	30.6	29.0	31.0		36.2		22.7				36.6		-	-	-	Triplicate Site with DT189A, DT189B and DT189C - Annual data provided for DT189C only
DT189C	415910	430551	31.2	37.2	31.8		32.9	27.8	20.9	29.6			39.9	25.5	30.2	25.0	-	Triplicate Site with DT189A, DT189B and DT189C - Annual data provided for DT189C only
DT105	415780	430504	46.3	56.4	46.7	58.9	54.6	49.3					53.8	37.6	50.4	39.4	35.2	
DT281	415771	430476	37.7	54.3	52.0	63.1	51.3	54.8	34.6	47.4	32.1	62.6	50.1	36.0	47.9	39.8	34.7	
DT186A	415743	430482	25.9	28.4	25.9	29.4	22.4	21.7	18.7	22.5	19.7	33.4	28.1	20.2	-	-	-	Triplicate Site with DT186A, DT186B and DT186C - Annual data provided for DT186C only
DT186B	415743	430482	23.7	34.6	29.7	25.8		24.0	16.1	23.8	21.0	36.8	33.5	21.0	-	-	-	Triplicate Site with DT186A, DT186B and DT186C - Annual data provided for DT186C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT186C	415743	430482	29.7	36.6	29.1	27.2	23.2	23.3	19.4	23.7	20.9	32.3	29.4	24.2	25.6	21.3	-	Triplicate Site with DT186A, DT186B and DT186C - Annual data provided for DT186C only
DT187A	415715	430669	28.8	29.9		32.9	29.7		23.3	27.6	20.5	38.1		23.4	-	-	-	Triplicate Site with DT187A, DT187B and DT187C - Annual data provided for DT187C only
DT187B	415715	430669	32.6		24.8	35.4	31.1	30.3	23.7	29.2	19.6	39.9	33.4		-	-	-	Triplicate Site with DT187A, DT187B and DT187C - Annual data provided for DT187C only
DT187C	415715	430669	29.6		30.5	34.2	30.7	29.2	21.2	28.7	20.2	41.3	37.8	25.5	29.3	24.3	-	Triplicate Site with DT187A, DT187B and DT187C - Annual data provided for DT187C only
DT106A	415702	430701	30.1			29.3	22.1	22.5	20.4	26.4	24.7		33.1	27.6	-	-	-	Triplicate Site with DT106A, DT106B and DT106C - Annual data provided for DT106C only
DT106B	415702	430701	27.4	29.5		28.5	21.1	20.8	22.9	26.9	20.6	31.3		27.6	-	-	-	Triplicate Site with DT106A, DT106B and DT106C - Annual data provided for DT106C only
DT106C	415702	430701	29.6	32.2	28.7	30.0	21.1	23.6	23.8	25.3	19.5	34.3	31.3	25.9	26.9	22.3	-	Triplicate Site with DT106A, DT106B and DT106C - Annual data provided for DT106C only
DT192A	416218	430420	24.4	28.6	22.4	27.7	25.1	23.2	15.7		20.9	35.7	30.0	23.0	-	-	-	Triplicate Site with DT192A, DT192B and DT192C - Annual data provided for DT192C only
DT192B	416218	430420	25.8	32.9	28.4	30.1	24.4	24.2	15.9		20.6	37.4	30.0	24.3	-	-	-	Triplicate Site with DT192A, DT192B and DT192C - Annual data provided for DT192C only
DT192C	416218	430420	30.5	31.6	27.2	28.7	25.8	23.1	19.0		20.4	31.2	35.1		26.1	21.7	-	Triplicate Site with DT192A, DT192B and DT192C - Annual data provided for DT192C only
DT193A	416239	430435	39.8	38.8	31.9	30.8	28.0	25.4	26.7	25.5					-	-	-	Triplicate Site with DT193A, DT193B and DT193C - Annual data provided for DT193C only
DT193B	416239	430435	36.1	37.3	32.9	33.0	27.9	26.5	26.5	23.3					-	-	-	Triplicate Site with DT193A, DT193B and DT193C - Annual data provided for DT193C only
DT193C	416239	430435	35.8	32.3	30.0	28.4	27.7	21.9	25.3	23.7					29.5	26.5	-	Triplicate Site with DT193A, DT193B and DT193C - Annual data provided for DT193C only
DT212A	416398	430194	32.1	35.5	28.7	28.4	27.5	26.5	21.4	25.8	20.5	32.7		25.6	-	-	-	Triplicate Site with DT212A, DT212B and DT212C - Annual data provided for DT212C only
DT212B	416398	430194	33.6	35.9	29.6	30.2	27.5	27.0	18.8	26.9	22.0	37.9	31.6	26.0	-	-	-	Triplicate Site with DT212A, DT212B and DT212C - Annual data provided for DT212C only
DT212C	416398	430194	25.7	32.5	28.3	29.3	24.2	26.9	20.5	26.2	20.0	35.3	32.3	22.5	27.8	23.1	-	Triplicate Site with DT212A, DT212B and DT212C - Annual data provided for DT212C only
DT213A	416390	430214	26.8	31.0	26.3	27.8	20.5	24.3	19.9	24.5	19.7	31.7	30.3	25.1	-	-	-	Triplicate Site with DT213A, DT213B and DT213C - Annual data provided for DT213C only
DT213B	416390	430214	28.2	32.2	28.7	28.2	23.2	22.9	19.4	26.7	21.7	32.4	30.5	23.5	-	-	-	Triplicate Site with DT213A, DT213B and DT213C - Annual data provided for DT213C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT213C	416390	430214	29.8	27.8	27.9	28.9	22.5	22.7	20.3	22.9	21.4	32.2	35.3	27.0	26.2	21.7	-	Triplicate Site with DT213A, DT213B and DT213C - Annual data provided for DT213C only
DT211A	415922	431089	48.7		44.8	46.2	47.0	42.1	41.8	43.2	31.1	50.8	56.5	41.9	-	-	-	Triplicate Site with DT211A, DT211B and DT211C - Annual data provided for DT211C only
DT211B	415922	431089	49.5	56.3	50.8	47.5	45.0	42.5	41.6	40.8	39.1	51.5	47.5	39.3	-	-	-	Triplicate Site with DT211A, DT211B and DT211C - Annual data provided for DT211C only
DT211C	415922	431089	55.2	56.0	49.2	49.0	46.6	42.6	41.5	42.7	34.4	49.6	59.1	36.0	46.1	38.2	32.6	Triplicate Site with DT211A, DT211B and DT211C - Annual data provided for DT211C only
DT295	415691	432039					17.8	14.6	12.8	16.7	20.6	27.8	27.4	19.6	19.5	17.5	-	
DT296	415710	432070					15.7	17.7	15.2	19.0				20.1	17.7	19.0	-	
DT297	415618	432070					14.6	15.7	13.4	17.0	19.5	23.4	23.1	18.8	18.1	16.3	-	
DT84	416054	432675	34.7	36.5	33.3	30.9	30.1	27.3	24.3	28.8	21.7	37.7	35.8	25.8	30.4	25.3	-	
DT79	416282	432966	25.4	31.6	29.6	25.2		22.7	22.4		45.0	33.9		23.5	28.8	23.9	-	
DT161A	416148	433102	48.0	54.3	45.6	50.0	44.1	44.8			45.9	51.8	46.0	36.4	-	-	-	Triplicate Site with DT161A, DT161B and DT161C - Annual data provided for DT161C only
DT161B	416148	433102	45.2	60.5	47.4	53.1	50.4	45.8			41.7	52.6	48.9	36.2	-	-	-	Triplicate Site with DT161A, DT161B and DT161C - Annual data provided for DT161C only
DT161C	416148	433102	48.1	53.9	51.8	48.5	45.9	41.6			43.8	50.3	48.6	39.5	47.2	39.2	38.9	Triplicate Site with DT161A, DT161B and DT161C - Annual data provided for DT161C only
DT162A	416148	433134	44.3	49.0	45.2	51.0	44.2	41.4			38.3	48.3	48.9	36.8	-	-	-	Triplicate Site with DT162A, DT162B and DT162C - Annual data provided for DT162C only
DT162B	416148	433134	38.7	43.0	43.3	47.0	40.7	37.1			42.8	46.2	42.2	34.4	-	-	-	Triplicate Site with DT162A, DT162B and DT162C - Annual data provided for DT162C only
DT162C	416148	433134	40.3	44.3	43.5	43.2	41.7	37.8			44.1	44.0	45.2	35.3	42.7	35.4	-	Triplicate Site with DT162A, DT162B and DT162C - Annual data provided for DT162C only
DT163A	416147	433158	39.1	41.9	44.9	47.8	38.2	40.4			45.0	45.3	44.5	37.9	-	-	-	Triplicate Site with DT163A, DT163B and DT163C - Annual data provided for DT163C only
DT163B	416147	433158	43.9	44.8	45.8	48.1	35.9	40.0			42.4	46.0	47.5	37.6	-	-	-	Triplicate Site with DT163A, DT163B and DT163C - Annual data provided for DT163C only
DT163C	416147	433158	35.3	40.9	43.5	45.2	37.5	37.4			45.1	44.4	43.2	37.6	42.3	35.1	-	Triplicate Site with DT163A, DT163B and DT163C - Annual data provided for DT163C only
DT164A	416139	433134	40.4	39.3	42.7	35.6	31.7	33.1			45.7	40.7	48.5	40.2	-	-	-	Triplicate Site with DT164A, DT164B and DT164C - Annual data provided for DT164C only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT164B	416139	433134	44.3	42.1	44.6	38.9		31.7			45.7	42.6	50.8	41.9	-	-	-	Triplicate Site with DT164A, DT164B and DT164C - Annual data provided for DT164C only
DT164C	416139	433134	43.9	43.0	44.1	39.1	34.0	33.6			32.4	37.8	48.2	41.5	40.5	33.6	-	Triplicate Site with DT164A, DT164B and DT164C - Annual data provided for DT164C only
DT109A	415858	433061	39.7	41.0	33.3	35.0	32.4	29.3	28.4	31.5	32.2	38.8	37.9	31.1	-	-	-	Triplicate Site with DT109A, DT109B and DT109C - Annual data provided for DT109C only
DT109B	415858	433061	38.3	38.0	27.5	34.7	28.9	26.5	26.5	33.0	31.7	36.5	35.7	24.6	-	-	-	Triplicate Site with DT109A, DT109B and DT109C - Annual data provided for DT109C only
DT109C	415858	433061	31.3	39.5	35.3	36.7	32.4	28.9		31.3	30.4	37.7	36.7	29.4	32.9	27.3	-	Triplicate Site with DT109A, DT109B and DT109C - Annual data provided for DT109C only
DT181A	415845	433041	37.9	35.3	33.2	32.5	27.0	25.5	27.6	31.3	35.5	36.0	38.0	29.7	-	-	-	Triplicate Site with DT181A, DT181B and DT181C - Annual data provided for DT181C only
DT181B	415845	433041	37.8	36.1		34.6	29.0	28.3	29.6	30.4	31.9	36.0	36.2	28.3	-	-	-	Triplicate Site with DT181A, DT181B and DT181C - Annual data provided for DT181C only
DT181C	415845	433041	38.0	33.5	35.1	28.8	26.5	26.7	28.8	31.4	32.3	36.0	39.9	30.9	32.4	26.9	-	Triplicate Site with DT181A, DT181B and DT181C - Annual data provided for DT181C only
DT108A	415891	433045	40.2	40.7	36.3	37.1	34.7	31.7	30.8	34.4	35.2	40.5	43.2	30.3	-	-	-	Triplicate Site with DT108A, DT108B and DT108C - Annual data provided for DT108C only
DT108B	415891	433045	39.3		37.2	38.0	35.8	32.0	26.1	34.6	32.7	41.9	44.8	31.7	-	-	-	Triplicate Site with DT108A, DT108B and DT108C - Annual data provided for DT108C only
DT108C	415891	433045	38.0	41.2	28.9	35.8	32.8	32.0	27.4	27.2		38.9	41.4	27.0	35.3	29.3	-	Triplicate Site with DT108A, DT108B and DT108C - Annual data provided for DT108C only
DT182A	415874	433026	29.4	31.7	34.2	31.9	27.1	25.6	25.3	29.2	29.1	36.3	32.8	26.3	-	-	-	Triplicate Site with DT182A, DT182B and DT182C - Annual data provided for DT182C only
DT182B	415874	433026	33.3	34.7		30.0	24.2	24.8	25.3	27.4		35.6		26.8	-	-	-	Triplicate Site with DT182A, DT182B and DT182C - Annual data provided for DT182C only
DT182C	415874	433026	35.5	35.2	31.8	32.1	25.1	24.5	24.7	28.4	31.1	32.5	38.4	29.1	30.2	25.0	-	Triplicate Site with DT182A, DT182B and DT182C - Annual data provided for DT182C only
DT110	415806	433061	31.0	32.8	31.0	29.8	25.0	24.1	26.9	28.8	34.8	34.0	37.8	29.4	30.4	25.3	-	
DT279	415591	433141	35.5		36.1	34.7		28.5		31.1	34.9	38.3	35.9	34.6	34.2	28.4	-	
DT280	415665	433175	34.4	38.0		43.9	34.2	35.7	31.3	33.5	49.6	41.3	42.9	32.3	37.9	31.5	-	
DT183	416215	433059	49.0	48.5	43.8	45.1	43.5		42.1			57.1	52.1	47.4	47.5	39.4	30.8	
DT184	416217	433071	47.0	47.6	43.2	44.6	43.1	40.8			39.9	49.6	51.9	40.8	44.7	37.1	31.0	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT167A	416392	433046	42.5	45.8		48.9	40.4	40.2	41.3	37.4	45.7	48.0	49.8	36.4	-	-	-	Triplicate Site with DT167A, DT167B and DT167C - Annual data provided for DT167C only
DT167B	416392	433046	38.1	46.7	46.4	51.6	38.8	38.8	43.3	38.0	41.9	51.0	50.7	39.5	-	-	-	Triplicate Site with DT167A, DT167B and DT167C - Annual data provided for DT167C only
DT167C	416392	433046	44.7	48.1	45.8	49.1	41.1	46.8	41.5	38.2	39.6	47.5	49.9	33.1	43.6	36.2	30.9	Triplicate Site with DT167A, DT167B and DT167C - Annual data provided for DT167C only
DT185A	416381	433054	43.5	42.5	41.3	41.6	40.5		33.1	34.5	35.3	44.4	47.3	36.7	-	-	-	Triplicate Site with DT185A, DT185B and DT185C - Annual data provided for DT185C only
DT185B	416381	433054	44.6	45.0	43.5	42.3	40.4	37.1	40.0	36.4		43.5	47.9	39.5	-	-	-	Triplicate Site with DT185A, DT185B and DT185C - Annual data provided for DT185C only
DT185C	416381	433054	39.6	39.6		42.3	37.5	36.6	35.2	32.7	39.2	42.9	38.0	36.8	39.8	33.0	-	Triplicate Site with DT185A, DT185B and DT185C - Annual data provided for DT185C only
DT277	416398	433050	39.0	42.3	40.5	43.5	36.7	33.0	36.2	33.7	62.7	43.1	46.0	33.9	40.8	33.9	-	
DT12A	416970	433259	62.3	66.1	56.8	52.5	52.5	53.7	57.1	51.3	65.7	49.8	65.0	57.6	-	-	-	Triplicate Site with DT12A, DT12B and DT12C - Annual data provided for DT12C only
DT12B	416970	433259	68.9	61.7	62.5	52.1	52.1	51.3	57.6	54.1	59.5	56.3	63.9	58.9	-	-	-	Triplicate Site with DT12A, DT12B and DT12C - Annual data provided for DT12C only
DT12C	416970	433259	62.8	61.5	61.3	55.4	49.7	50.1	57.2	53.7		52.9	55.7	59.4	57.6	**47.8**	**46.9**	Triplicate Site with DT12A, DT12B and DT12C - Annual data provided for DT12C only

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

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

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used**

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

☒ **City of Bradford MDC confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within City of Bradford MDC During 2023

City of Bradford MDC routinely screens planning applications against the West Yorkshire Low Emission Planning Guidance to determine if they are likely to have a minor, medium or major impact on local air quality. Link to West Yorkshire Low Emission Planning Guidance

Until recently all planning applications with new parking spaces were required to provide type 1 mitigation in the form of EV charging points but this requirement has now been updated to reflect the new EV charging Building Regulations (Approved Document S). Under the new requirements all housing applications are required to provide 1 EV charging point per dwelling (unless they can demonstrate a valid exemption under the Building Regulations) and only commercial premises with more than 10 parking spaces need to provide an EV charging strategy.

Applications with the potential to impact on relevant receptor points during the construction and demolition phases are required to provide construction dust risk assessments and management plans.

Major impact developments additionally require a full air quality impact assessment and damage cost calculation. Some major developments are required to provide additional site-specific type 3 emission mitigation strategies.

Where a new development has potential to introduce new relevant receptor points into an area considered at risk of exceeding air quality objectives an exposure assessment is also required.

Table C.1 shows medium and major applications for which mitigation was achieved in 2022. Additional mitigation in the form of EV charging and CEMPs was obtained on many other minor applications not detailed in this table. A total of 61 full planning applications, 78 pre-planning applications and 30 condition discharge consents were considered by the CAP team during 2023.

Table C1: Planning mitigation 2023

Planning reference	Proposal	Current status	Mitigation	Further comments
22/05307/MAF	Construction of 51 No apartment retirement living development (Use Class C3), landscaping, car parking and all associated works. Land At Bradford Road, Idle, Bradford, West Yorkshire, BD10 8SQ.	Granted	EV Charging CEMP Travel Plan	Detailed AQ impact assessment reviewed. No issues arising.
23/00435/MAF Pending Decision. EV Charging	Demolition of mill complex and construction of new industrial units (5, 416 sqm - Use Classes B2 & B8) with associated infrastructure. Walk Mills, The Walk, Keighley, West Yorkshire.	Pending Decision.	EV Charging CEMP Travel Plan	
23/00301/FUL	Heating plant with associated pipework, gantries, new flues and alterations to existing flue stack | Solenis Cleckheaton Road Bradford West Yorkshire BD12 0JZ	Granted	Not required due to predicted reduction in emissions from replacement plant.	Detailed AQ impact assessment reviewed. No issues arising, significant reduction in NOx emissions expected.
23/00829/MCF	Re-opening of Horn Crag Quarry for the purposes of releasing a proven locally distinctive building stone resource - Horn Crag Quarry off Fishbeck Lane Silsden, Keighley	Refused	Not required due to refusal	Traffic impact stated there would be no more than 10 two-way (5 in and 5 out) HGV movements on any single

				working day, as well as a maximum of 40 HGV two-way (20 in and 20 out) movements per week
23/01541/MAF	Construction of an energy centre with associated access, landscaping, and the temporary use of adjacent land for contractor activities and material storage, Land West Of 177 Thornton Road Bradford	Granted	Height of stack and type / size of has boiler plant conditioned.	Detailed AQ impact assessment reviewed. Scheme is mainly an air source heat pump based scheme with back up /top up gas boilers to serve a district heat network. Overall impact of scheme considered not significant, in accordance with the stated methodology. Significant carbon savings predicted and removal of older gas plant.
23/01453/FUL	Installation of biomass boiler and flue, Patchett Homes Ltd, Ryefield Works Highgate Road Bradford West Yorkshire BD13 1DS	Granted.	Smoke Control Requirements Stack height and boiler type requested to be conditioned	Detailed AQ impact assessment reviewed, and improvements required. Approved AQ impact assessment concluded no significant health impacts based on assumed stack height and boiler operating conditions.

23/01456/MAF	Construction of extension to existing factory and the formation of new hard standing areas | Seabrook Potato Crisps Limited Princeville Road Industrial Estate Duncombe Street Bradford West Yorkshire BD8 9AJ	Granted	Bespoke emission mitigation strategy required. CEMP EV Charging Anti Idling Signage.	Damage cost calculation and detailed AQ impact assessment reviewed. Mitigation strategy to be agreed with LA.
23/01709/MAF	Development for 90 No residential dwellings, landscaping and associated infrastructure works | Former Site Of Coolgardie Keighley Road Bingley West Yorkshire	Pending Consideration	CEMP Travel Plan EV charging in line with building regs	Detailed Exposure assessment reviewed. No issues arising.
23/01188/FUL	Single storey lean-to extension to house a new 199KW Biomass Boiler and siting of silo to store the fuel | Unit 1 Whitehead Business Park Holland Street Bradford West Yorkshire BD4 8BH	Granted.	Smoke Control requirements. Will operate under environmental permit conditions.	Biomass screening and H1 assessment reviewed. overall effects of the proposed boiler are considered insignificant, in accordance with the stated methodology.
23/01983/MAF	Residential development (up to 72 dwellings) with associated access, parking, amenity space, landscaping and infrastructure works | Land Adj Drabble House Cottage Hawber Lane Silsden Keighley West Yorkshire BD20 0LR	Pending Consideration	EV Charging CEMP	Detailed AQ exposure and impact assessment reviewed. No issues arising.

23/02588/MAF	Construction of 17 B2/B8 units Land West Of Legrams Mill Woodhead Road, Bradford	Granted.	EV Charging. CEMP Travel Plan. Emission mitigation strategy required	Detailed air quality impact assessment and damage cost calculation reviewed. No issues arising.
23/02658/MAO	School expansion proposals comprising construction of new 18 classroom block, new car parking area, new ball games area, new substation and bus drop-off reconfiguration, Bingley Grammar School, Keighley Road Bingley West Yorkshire BD16 2RS	Granted	EV Charging CEMP Travel Plan Anti Idling Signage.	No major increase in traffic movements expected
23/04013/MAO	Outline planning permission for commercial development comprising 8 No business/industrial units, 3 No drive thru food/cafe/bakery, Land at Cemetery Road and Northside Road Bradford	Pending Consideration.	EV Charging CEMP Bespoke emission mitigation strategy required – green screen for school opposite suggested	Detailed AQ impact assessment and damage cost calculation reviewed. Insufficient evidence of potential AQ exceedances to recommend refusal.

City of Bradford MDC has also considered the air quality impact assessment of the following major improvement schemes.

Table C2: Improvement schemes under air quality consideration

Highways Scheme	Scheme overview	Status	Air quality work undertaken
Hard Ings Road improvement scheme	Increased road capacity to reduce congestion and provision of enhanced cycling and walking provision	Completed	Before scheme monitoring completed Post scheme monitoring now in place for 5 years Air quality impact assessments completed by third party and reviewed by CAP team
West Bradford Junctions Improvement Scheme	Upgrades planned at the junctions of Great Horton Road and Horton Grange Road, Thornton Road and Cemetery Road, and Toller Lane and Whetley Hill to reduce congestion	Great Horton Road and Horton Grange works completed 2023.	Baseline air quality monitoring completed Air quality impact assessments completed by third party and reviewed by CAP team Post scheme monitoring by CAP team agreed
Harrogate Road and New Line Junction Improvement Scheme	Substantial widening of all four arms of Greengates junction and new P-Loop junction to facilitate movements from Harrogate Road. Improved signalling and facilities for walking and cycling.	Completed	Before scheme monitoring completed Post scheme monitoring now in place for 5 years Air quality impact assessments completed by third party and reviewed by CAP team
Bradford Interchange Access scheme (Transforming Cities Fund)	New pedestrian access into Bradford Interchange to improve access to the interchange from key development sites in the city centre enhancing the experience and journey times for bus and rail users	Scheme in progress	CAP team advising on exposure reduction issues and provision of EV infrastructure. Some long term air quality monitoring already ongoing in the area.
South Bradford Park & Ride and Expressway (Transforming Cities Fund)	Provision of a bus based Park and Ride facility in south Bradford adjacent to M606 motorway	Public consultation completed in 2023. Detailed scheme planning in progress	CAP team advising on air quality impact assessment requirements and provision of EV infrastructure / low emission buses. Air quality monitoring already in place along proposed bus route which will pass through Mayo Avenue AQMA.

West Bradford Supercycle highway extension (Transforming Cities Fund)	Access, safety and amenity improvements for cyclists and pedestrians between Bradford city centre and the West of the city, including the education quarter via creation of a 7km of dedicated cycleway along Thornton Road.	Phase 1 under construction	CAP team advising on air quality impact assessment requirements. Some air quality monitoring already in place along the route. Scheme passes through Thornton Road AQMA

Additional Air Quality Works Undertaken by City of Bradford MDC During 2023

During 2023 CBMDC continued to monitor and evaluate the impact of the CAZ in conjunction with the Joint Air Quality Unit (JAQU). As shown on Figure 2 levels of nitrogen dioxide measured at the continuous monitoring sites in the district reached lowest ever levels during the first year of the CAZ operation.

JAQU completed the first state 1 assessment for the Bradford CAZ in autumn 2023. This identified 5 locations where the air quality standard for nitrogen dioxide wasn't met during the period January to June 2023. CBMDC are currently undertaking detailed source apportionment studies of traffic data from these sites to inform the development of any additional measures needed to further improve air quality at these locations.

Also, during 2023 a new network of 12 low cost Zephyr analysers to assess variations in PM10 and PM2.5 concentrations across the district was established and air pollution monitoring was undertaken as part of a school streets project. The council's new Clean Air Schools programme was also launched. Further details of all these projects can be found in the main body of the report.

No further additional studies were undertaken by City of Bradford MDC during 2023.

QA/QC of Diffusion Tube Monitoring

City of Bradford MDC undertakes diffusion tube monitoring across the district. As far as possible this is normally undertaken in line with the diffusion tube monitoring calendar provided by DEFRA with collections taking place within 2 days of the suggested collection date. The calendar is available on the LAQM helpdesk website. Due to the number of diffusion tubes deployed by City of Bradford MDC tubes are normally collected over four days (Tuesday to Friday of the recommended tube collection week).

On one occasion during October 2023 some tube collections had to run into the Monday of the following week due to staff availability. This occasion is detailed in Table C3 below.

Table C3: Diffusion tube collection dates in Bradford in 2023

Target collection date	Actual collection dates	Maximum deviation from target period
4th January 2023	03/01/2023 to 06/01/2023	0
1st February 2023	31/01/2023 to 03/02/2023	0

1st March 2023	28/02/2023 to 03/03/2023	0
5th April 2023	04/04/2023 to 07/04/2023	0
3rd May 2022	02/05/2023 to 05/05/2023	0
31st May 2023	30/05/2023 to 02/06/2023	0
5th July 2023	04/07/2023 to 7/07/2023	0
2nd August 2023	01/08/2023 to 4/08/2023	0
6th September 2023	05/09/2023 to 08/09/2023	0
4th October 2023	03/10/2023 to 09/10/2023	+3 days
1st November 2023	31/10/2023 to 03/11/2023	0
6th December 2023	05/12/2023 to 08/12/2023	0

During the 2023 period all diffusion tubes deployed by City of Bradford MDC were supplied and analysed by Gradko using the 50% TEA in acetone method.

Gradko participate in the Inter-Laboratory comparison scheme AIR PT. This is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme. AIR PT offers a number of test samples designed to test the proficiency of laboratories undertaking analysis of chemical pollutants in ambient indoor, stack and workplace air. One such sample is the AIR NO_2 test sample type that is distributed to participants in a quarterly basis. The results of this scheme are published annually.

The latest available AIR PT NO_2 diffusion tube results for Gradko are shown in Table C.4. Gradko have consistently achieved good precision results over the past 3 years providing a good level of confidence in their results.

Table C.4: Diffusion tube precision testing results for Gradko 2023

	2021 Good	2021 Bad	2022 Good	2022 Bad	2023 Good	2023 Bad
Precision testing results by year (50% TEA in acetone method)	16	0	16	0	14	0

Diffusion Tube Annualisation

Defra has developed a diffusion tube data processing tool to assist local authorities in processing their NO_2 diffusion tube monitoring data. More information about the tool is available here Link to LAQM website.

Annualisation of the City of Bradford MDC data (where necessary) for 20232 has been undertaken using this tool. Annualisation is required for any site with data capture less than 75% but greater than 25%.

Annualisation was undertaken using data from the following national monitoring network sites which meet the criteria for annualisation calculations as set out in Box 7.9 of LAQM.TG(22). All these sites lie within 50 miles of the City of Bradford MDC district.

- Leeds Centre
- Manchester Piccadilly
- Dewsbury Ashworth Grange

Details of all the City of Bradford MDC diffusion tubes that required annualisation for the 2023 period (along with the annualisation factors calculated using the diffusion tube data processing tool) are shown in Table C.5.

Table C.5 Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Leeds Centre	Annualisation Factor Piccadilly	Annualisation Factor Leeds Centre	Annualisation Factor Ashworth Grange	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT99	1.0774	1.0635	1.0556	1.0033	1.0500	26.0	27.3
DT93	0.9385	0.9289	0.9329	0.9073	0.9269	26.0	-
DT276	1.0369	1.0208	1.0096	0.9508	1.0045	15.4	15.5
DT306	1.1222	1.2756	1.2836	1.4218	1.2758	12.0	15.3
DT307	1.1236	1.1266	1.1340	1.2407	1.1562	12.2	14.1
DT132	1.0206	0.9350	0.9428	0.9486	0.9618	39.9	38.4
DT301	1.0348	1.0145	1.0207	1.0980	1.0420	21.9	22.8
DT302	1.1869	1.2495	1.2489	1.4474	1.2832	17.8	22.8
DT303	1.0603	1.0519	1.0655	1.1464	1.0810	21.6	23.4
DT304	1.0603	1.0519	1.0655	1.1464	1.0810	20.3	21.9
DT288	1.0603	1.0519	1.0655	1.1464	1.0810	20.3	21.9
DT289	1.0987	1.0530	1.0773	1.1533	1.0956	23.7	26.0
DT290	1.0017	1.0081	1.0239	1.0906	1.0311	22.7	23.4
DT249A	0.9473	0.9014	0.9144	0.9626	0.9314	-	-
DT249B	0.9473	0.9014	0.9144	0.9626	0.9314	-	-
DT249C	0.9473	0.9014	0.9144	0.9626	0.9314	34.8	32.5
DT298	1.0827	1.0961	1.1118	1.1900	1.1202	13.1	14.7
DT299	1.0603	1.0519	1.0655	1.1464	1.0810	12.6	13.6
DT50	1.1026	1.0843	1.0776	1.0947	1.0898	38.9	42.4
DT191	0.9270	0.9189	0.8974	0.9081	0.9129	55.4	50.6
DT293	0.8493	0.8596	0.8506	0.8932	0.8632	24.3	20.9
DT294	1.0603	1.0519	1.0655	1.1464	1.0810	26.2	28.3
DT308	1.1345	1.1492	1.1509	1.3106	1.1863	21.6	25.6

DT105	0.9452	0.9530	0.9451	0.9257	0.9423	50.4	47.5
DT193 A	1.0961	1.0879	1.0905	1.0502	1.0812	-	-
DT193 B	1.0961	1.0879	1.0905	1.0502	1.0812	-	-
DT193 C	1.0961	1.0879	1.0905	1.0502	1.0812	29.5	31.9
DT295	1.0603	1.0519	1.0655	1.1464	1.0810	19.5	21.1
DT296	1.2298	1.2727	1.2912	1.3982	1.2980	17.7	22.9
DT297	1.0603	1.0519	1.0655	1.1464	1.0810	18.1	19.6
DT79	0.9983	1.0175	1.0023	0.9901	1.0020	28.8	-
DT183	0.9108	0.9199	0.9297	0.9067	0.9168	47.5	-

Diffusion Tube Bias Adjustment

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.

City of Bradford MDC have applied a national bias adjustment factor of 0.83 to the 2023 monitoring data obtained from the National Diffusion Tube Bias Adjustment Factor Spreadsheet version 03/24 which was the latest version available at the time of writing. This factor has been derived from studies at 15 separate locations.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/24

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2024
LAQM Helpdesk Website

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

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

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List
If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List
If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List
If a year is not shown, we have no data[2]

Step 4:
Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method To undo your selection, choose (All) from the pop-up list	Year[2] To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2023	UB	City Of London Corporation	10	28	22	26.3%	G	**0.79**
Gradko	50% TEA in acetone	2023	R	City Of London Corporation	11	36	31	15.0%	G	**0.87**
Gradko	50% TEA in acetone	2023	R	LB Newham	12	27	21	28.0%	G	**0.78**
Gradko	50% TEA in acetone	2023	SU	Redcar And Cleveland Borough Council	12	14	10	48.0%	G	**0.68**
Gradko	50% TEA in Acetone	2023	R	Sandwell Mbc	12	33	26	27.6%	G	**0.78**
Gradko	50% TEA in acetone	2023	UB	Sandwell Mbc	11	21	18	15.8%	G	**0.86**
Gradko	50% TEA in acetone	2023	R	Sandwell Mbc	12	23	20	14.2%	S	**0.88**
Gradko	50% TEA in Acetone	2023	UC	Falkirk Council	12	33	29	14.9%	G	**0.87**
Gradko	50% TEA in Acetone	2023	UB	Falkirk Council	12	15	13	8.9%	G	**0.92**
Gradko	50% TEA in acetone	2023	R	London Borough Of Lewisham	11	33	27	22.7%	G	**0.82**
Gradko	50% TEA in Acetone	2023	R	London Borough Of Merton	12	37	31	18.5%	G	**0.84**
Gradko	50% TEA in acetone	2023	KS	Marylebone Road intercomparison	11	47	38	25.7%	G	**0.80**
Gradko	50% TEA in acetone	2023	R	Royal Borough Of Windsor And Maidenhead	11	27	23	21.6%	G	**0.82**
Gradko	50% TEA in acetone	2023	R	Royal Borough Of Windsor And Maidenhead	12	24	24	0.6%	G	**0.99**
Gradko	50% TEA in acetone	2023	R	London Borough Of Richmond Upon Thames	11	18	16	15.6%	G	**0.86**
Gradko	50% TEA in acetone	2023		**Overall Factor[3] (15 studies)**				**Use**		**0.83**

A summary of bias adjustment factors used by CBMDC over the past five years is presented in Table C.6.

Table C.6 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.83
2022	National	03/23	0.82
2021	National	03/22	0.83
2020	Local	-	0.92
2019	National	04/20	0.80

Although not used in this report a local bias correction factor for Keighley for 2023 has been calculated using the diffusion tube data processing tool. This returned a value of 0.83 which is the same as the national factor used in the report.

Table C.7 – 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	12	-	-	-	-
Bias Factor A	0.83 (0.79 - 0.89)	-	-	-	-
Bias Factor B	20% (13% - 27%)	-	-	-	-
Diffusion Tube Mean (µg/m^3)	24.0	-	-	-	-
Mean CV (Precision)	5.2%	-	-	-	-
Automatic Mean (µg/m^3)	20.0	-	-	-	-
Data Capture	94%	-	-	-	-
Adjusted Tube Mean (µg/m^3)	20 (19 - 21)	-	-	-	-

Notes:

No local bias adjustment factor has been used to bias adjust the 2023 diffusion tube data. The local bias adjustment value is provided for information only.

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.

The information used in the Diffusion Tube Data Processing Tool to calculate the fall off with distance values for diffusion tubes with annual results greater than 36µg/m^3 during 2023 are summarised in Table C8 below.

During 2023 an additional diffusion tube site DT191 returned values greater than 36µg/m^3 but could not be distance corrected as the distance from a relevant receptor point lies outside the limits of the distance correction tools. This tube is not included in Table C8.

Table C.8 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
DT223A, DT223B, DT223C	2.0	5.0	37.3	20.6	33.7	
DT278	2.0	9.0	37.1	20.9	31.4	
DT31	1.6	11.2	39.4	14.8	28.7	
DT105	3.1	6.8	39.4	18.9	35.2	
DT281	2.5	6.2	39.8	17.2	34.7	
DT211A, DT211B, DT211C	2.4	7.9	38.2	18.9	32.6	
DT161A, DT161B, DT161C	1.8	1.9	39.2	18.9	*38.9*	*Predicted concentration at Receptor within 10% the AQS objective.*
DT183	1.1	8.2	39.4	18.6	30.8	
DT184	0.6	3.7	37.1	18.6	31.0	
DT167A, DT167B, DT167C	0.6	3.1	36.2	18.6	30.9	
DT12A, DT12B, DT12C	3.4	3.9	47.8	23.8	**46.9**	*Predicted concentration at Receptor above AQS objective.*

QA/QC of Automatic Monitoring

City of Bradford MDC's air quality analysers are type approved as recommended in LAQM.TG1 (00) *Review and Assessment: Monitoring air quality* and LAQM.TG4 (00) *Review and assessment: Pollutant specific guidance.* All the real time data provided in this report is independently ratified data from council operated analysers except for the Mayo Avenue site (CM4) which is affiliated to the Defra AURN network.

City of Bradford MDC is currently contracted to provide Local Site Operator (LSO) support for the Mayo Avenue site which normally includes the undertaking of fortnightly manual calibrations. During 2023 calibrations at the Mayo Avenue site were reduced to 1 per month at the request of the AURN management team. This was necessary due to a national shortage of calibration gases. Fortnightly calibrations have now resumed. More information about the operation and management of AURN sites is available here Link to Defra AURN website.

The day-to-day operation of the Council's own automatic network is managed by the Sustainability team. The monitoring officer located within this team undertakes trouble shooting activities associated with the equipment operation (e.g. initial investigation of site malfunctions, communication resets, filter changes etc.) and is also responsible for the maintenance and upkeep of the sites to ensure the inlets remain free from obstacles and any damage to the sites or pest infestations are dealt with promptly. The monitoring officer liaises directly with the data management contractor and is generally able to provide a same day response to any concerns raised with the data or lack of communications during the working week. Where necessary the monitoring officer places a call out to the service and maintenance provider (currently Signal group) and ensures that repairs are carried out promptly and to the council's satisfaction.

Regular manual calibration of the monitoring equipment is essential to ensure the quality of the data collected is of a high standard. Routine calibration of the City of Bradford MDC sites is usually undertaken twice per month. One of these calibrations is undertaken by an independent contractor and the other by trained members of the Sustainability team. The independent contractor was previously employed as an air quality officer at the council for many years and has been extensive knowledge of the Bradford air quality monitoring network. Having the independent contractor in place ensures routine calibrations are undertaken regularly and is not impacted on by the varying workload of the permanent members of the Sustainability team. Additional calibrations are undertaken by the Signal

group engineers following any interruption to the systems such as a breakdown or routine service.

During calibration visits a manual zero and span calibration check is performed. The methodology used is essentially that found in the AURN Local Site Operators and the manufacturer's instruction manual.

The basic steps are:

- Pre-calibration check of the general site condition and status of the analyser, before the zero and span checks are performed.
- Zero check to verify the performance of the analyser in the absence of the gas being monitored.
- Span check to verify the response of the analyser to gas of a known concentration.
- Post calibration check of the general site condition and status of the analyser on completion of all calibration routines.

A record of each analyser zero and span check is fully documented and sent to the data management contractor. Records of a calibrations are kept for up to 5 years.

The gases used for onsite span calibration checks at the Bradford owned air pollution stations are supplied by Air Liquide Ltd. Calibration gases for the Mayo Avenue AURN site are supplied by BOC Ltd. Calibration gases are traceable via European Accreditation DIN EN 45001 and DIN EN ISO 900. The tolerance of the nitrogen dioxide and nitric oxide in air mixes is typically ±5%. Zero air is generated internally in the Ambirak, and the scrubbers are changed when necessary in accordance with manufacturer's recommendations and the LSO Site Manual for the Ambirak.

Signal Group (the equipment supplier) provide six monthly routine service and maintenance visits and provide an emergency repair and breakdown service for the Bradford monitoring network. They normally respond to any call outs within 24 to 48 hours of the call being placed. Having a high quality service and maintenance contract in place is essential to maintain high levels of good quality data capture across the Bradford monitoring network.

All data generated by the Bradford automatic analysers is independently collected and ratified by an external contractor. The current data management service provider is Air Quality Data Management (AQDM), a well-established and respected air quality data management supplier. More information about AQDS can be found here: Link to Air

Quality Data Management website AQDM remotely checks the operational status of all the Bradford monitoring sites on a daily basis (apart from the Mayo Avenue AURN site) and provide regular updates to the council on air quality conditions around the district. At the end of each year they provide a fully verified and ratified data set for every site to be used as the basis for ASR reporting. Having an independent data management contractor in place ensures the Bradford air quality data is of a high standard and any problems with the equipment are identified early thereby minimising data loss and ensuring high percentage data capture at all sites.

Daily air quality data from the Bradford Council operated network can be viewed daily on the Air Quality Net website operated by AQDS here: Link to Air Quality Net website

Daily and summary air quality data from the Mayo Avenue AURN site can be viewed daily on the Air Quality England website here: Link to Mayo Avenue data on Air Quality England website

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

The type of PM10/PM2.5 monitor(s) utilised within City of Bradford MDC do not require the application of a correction factor. The data has been subject to independent ratification and verification checks by Air Quality Data Management.

Automatic Monitoring Annualisation

All automatic monitoring locations within City of Bradford MDC recorded data capture of greater than 75% during 2022 therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within City of Bradford MDC required distance correction during 2023.

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

Figure D.1 – Map of AQMAs and automatic monitoring sites in Bradford

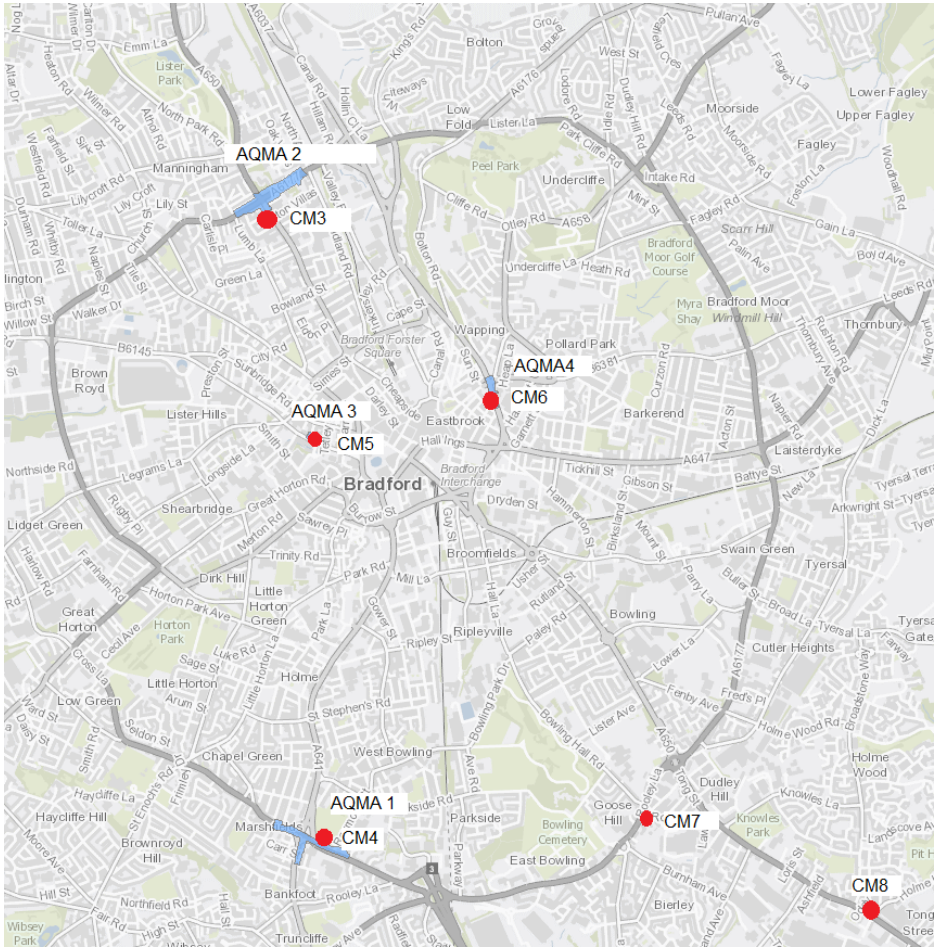


Figure D.2 – Map of AQMAs and Keighley automatic analyser

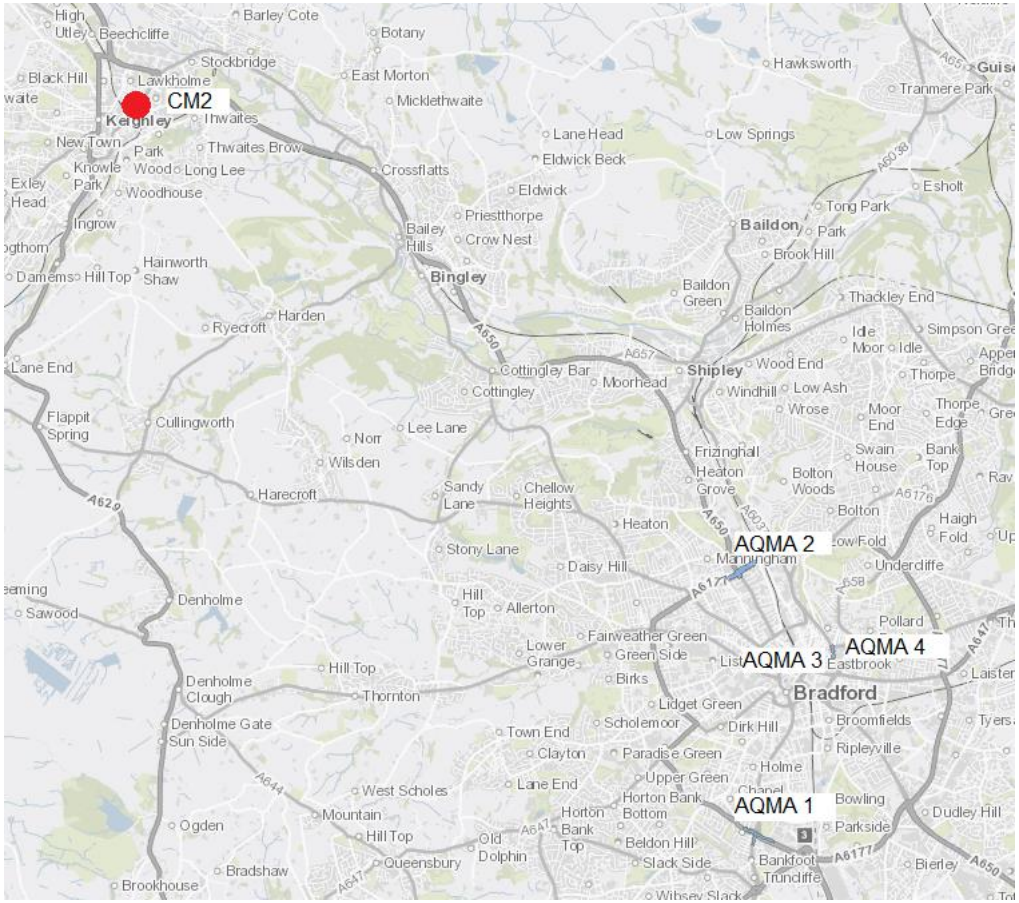


Figure D.3 – Map of previous areas of air quality concern

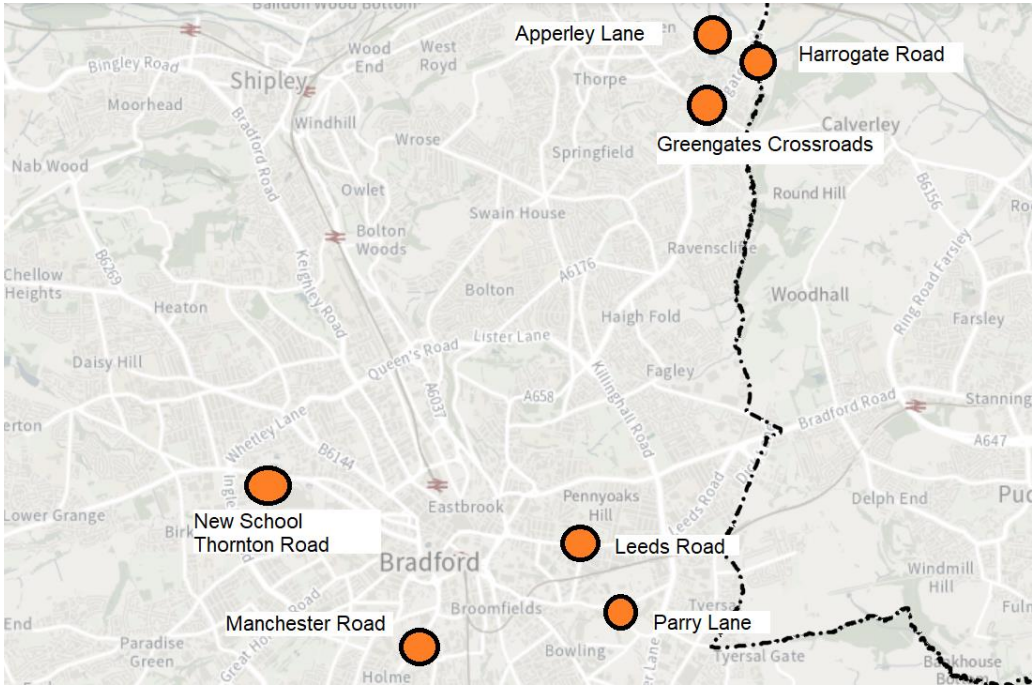
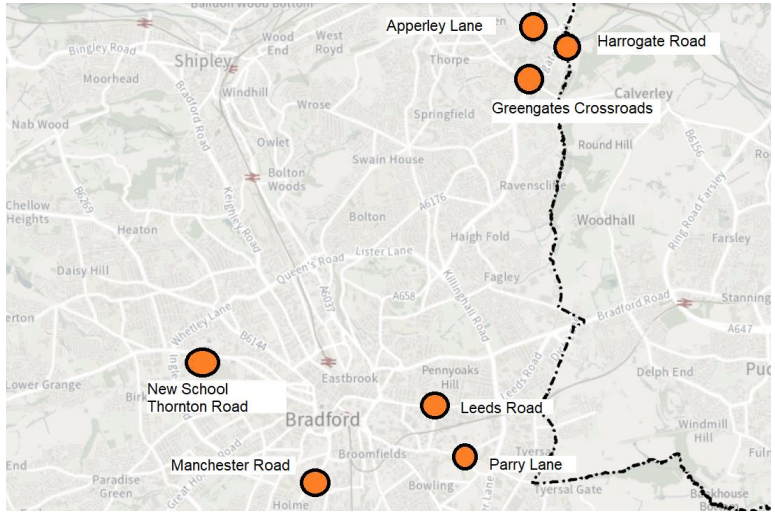
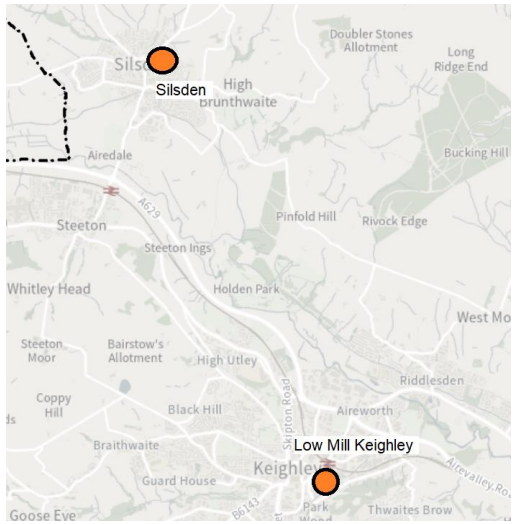


Figure D.4 – Map of other locations discussed in the report





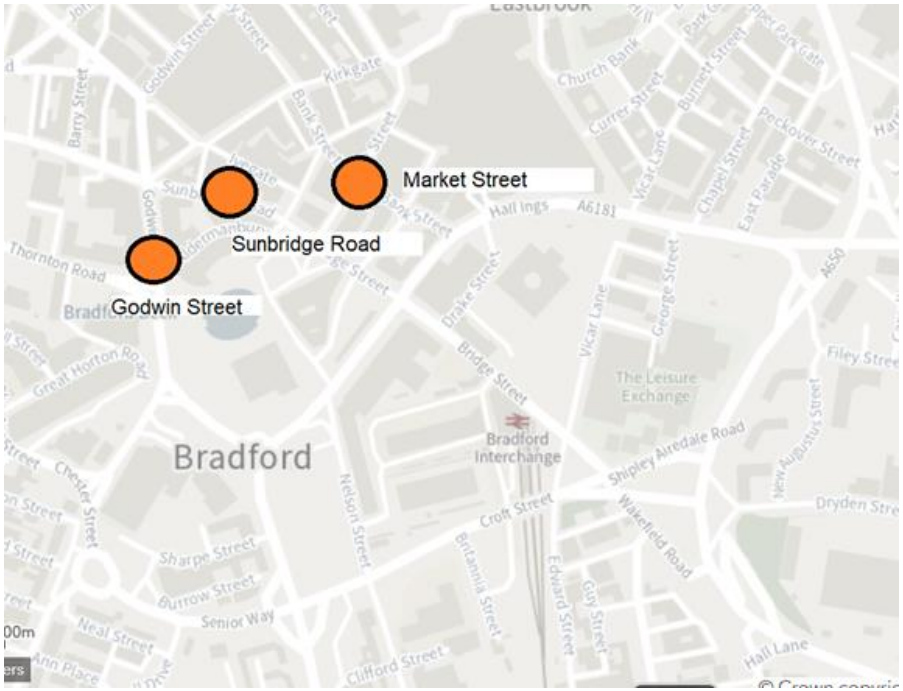
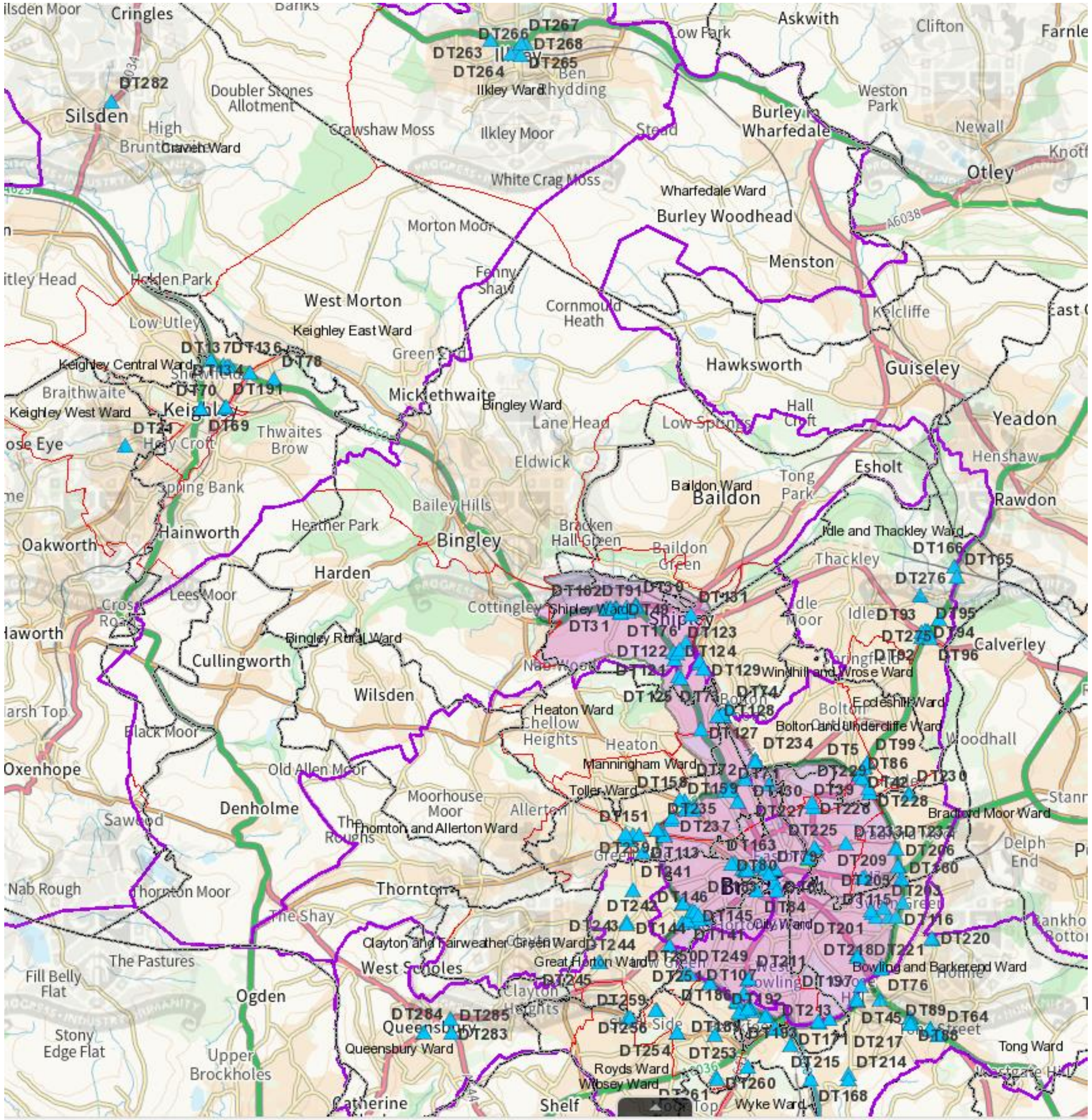

Market Street
Sunbridge Road
Godwin Street
Bradford
Bradford Interchange
The Leisure Exchange
Shipley Airedale Road
Wakefield Road
Croft Street
Bridge Street
Vicar Lane
George Street
Drake Street
Nelson Street
Britannia Street
Edward Street
Gray Street
Hall Lane
Sharpe Street
Burrow Street
Senior Way
Neal Street
Clifford Street
Thornton Road
Great Horton Road
Chester Street
Kirkgate
Church Bank
Currer Street
Burnett Street
Peckover Street
Chapel Street
East Parade
New Augustus Street
Dryden Street
Filey Street
A6181
A650

Figure D.5 – Map of all non-automatic monitoring sites in Bradford District



Exact locations available to view here:

[GIS map of Bradford Diffusion Tube data]

Figure D.6 – Map of Non-Automatic Monitoring Sites in Mayo Avenue AQMA (order 1)

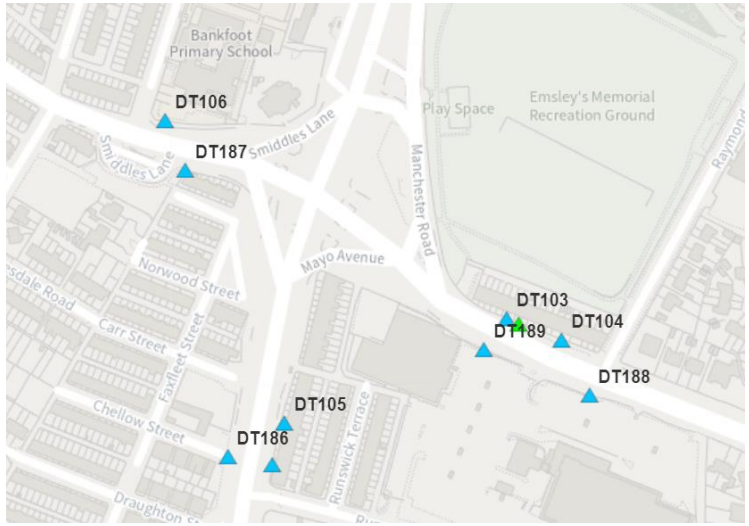


Figure D.7 – Map of Non-Automatic Monitoring Sites in Manningham Lane AQMA (order 2)

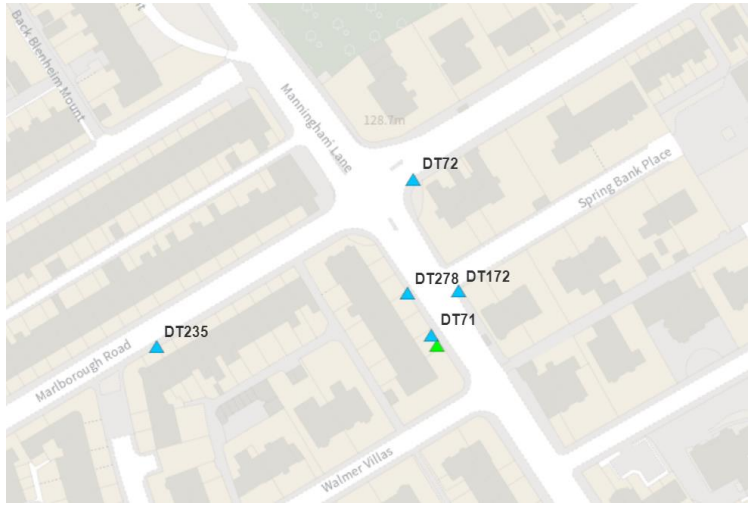


Figure D.8 – Map of Non-Automatic Monitoring Sites in and near Thornton Road AQMA (order 3)

Figure D.9 – Map of Non-Automatic Monitoring Sites in and near Shipley Airedale Road AQMA (order 4)

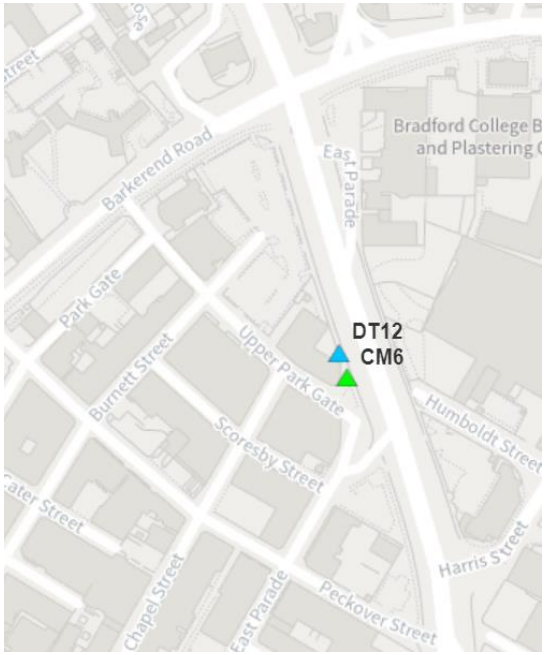
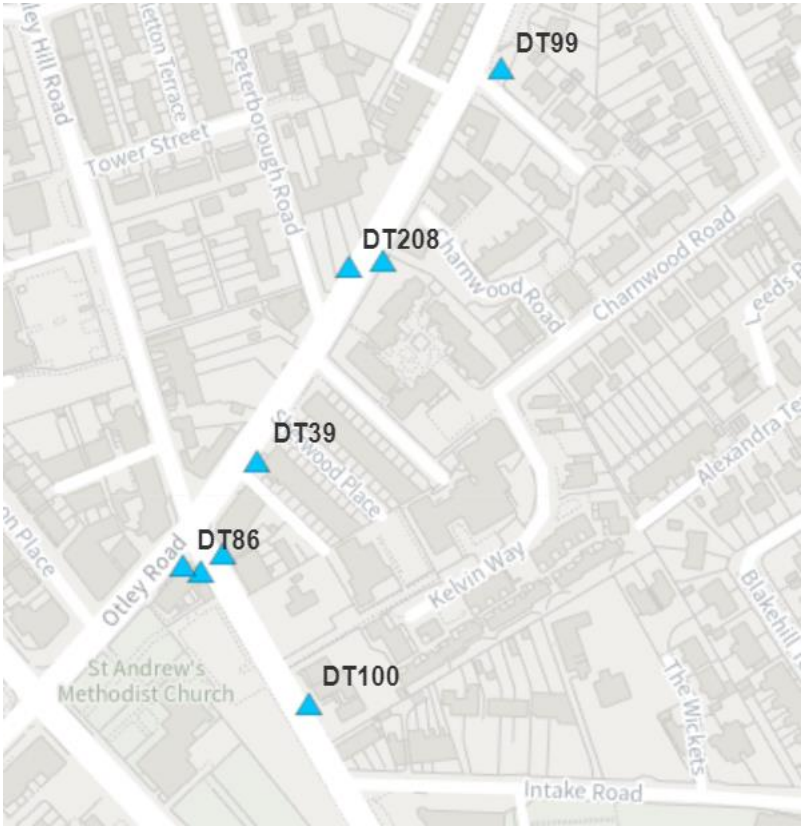


Figure D.10 – Map of Non-Automatic Monitoring Sites near Harrogate Road / Killinghall Road



Site DT100 no longer in operation

Figure D.11 – Map of Non-Automatic Monitoring Sites near Saltaire crossroads

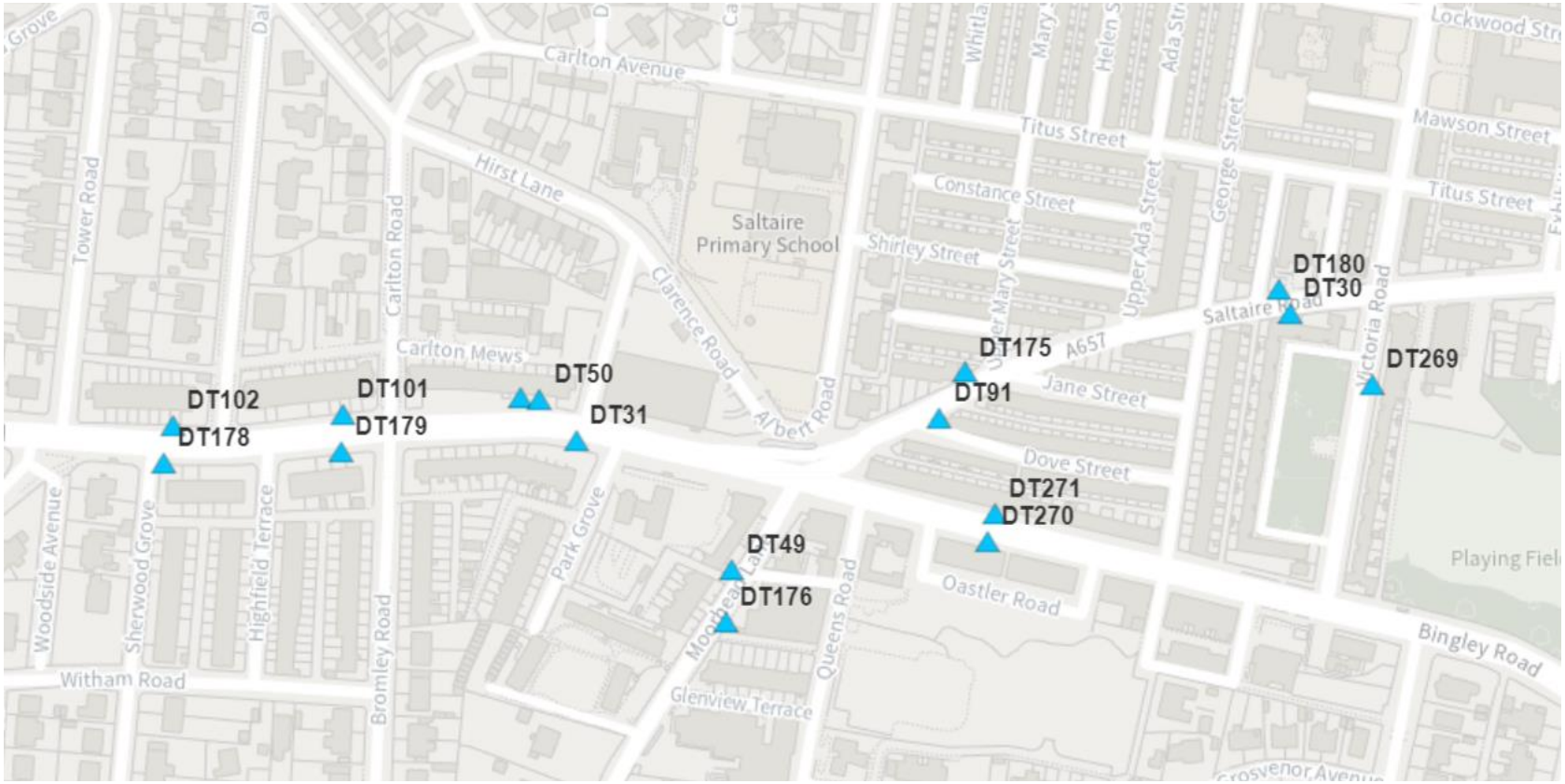


Figure D.12 – Map of Non-Automatic Monitoring Sites on Canal Road

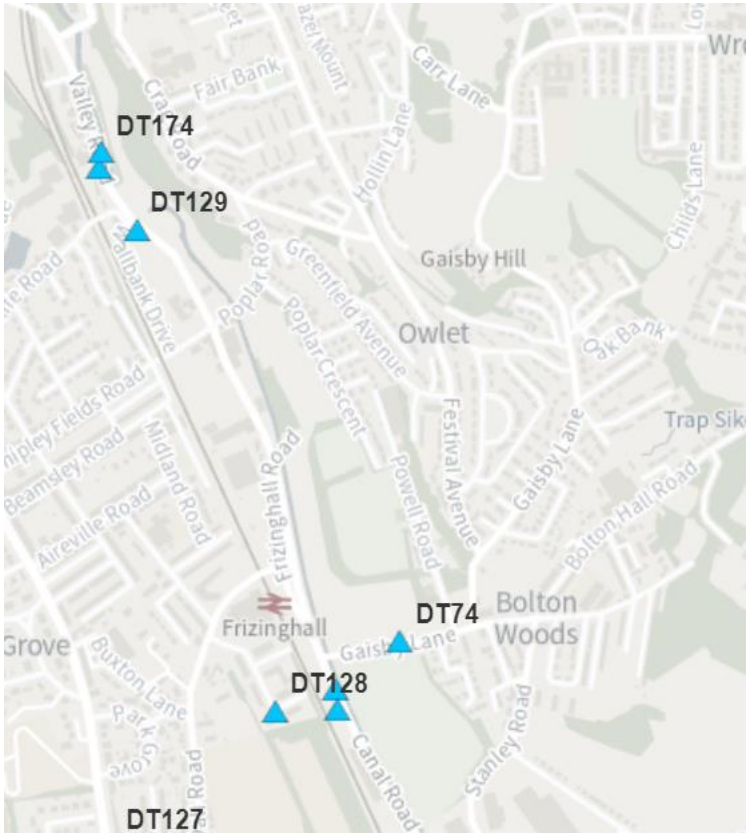


Figure D.13 – Map of Non-Automatic Monitoring Sites on Rooley Lane / Tong Street

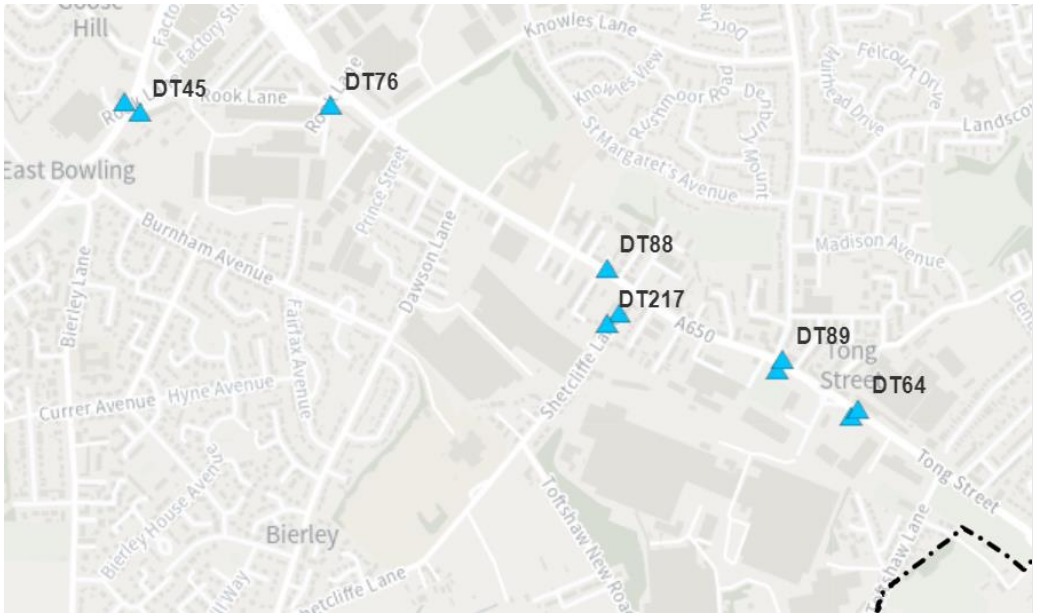
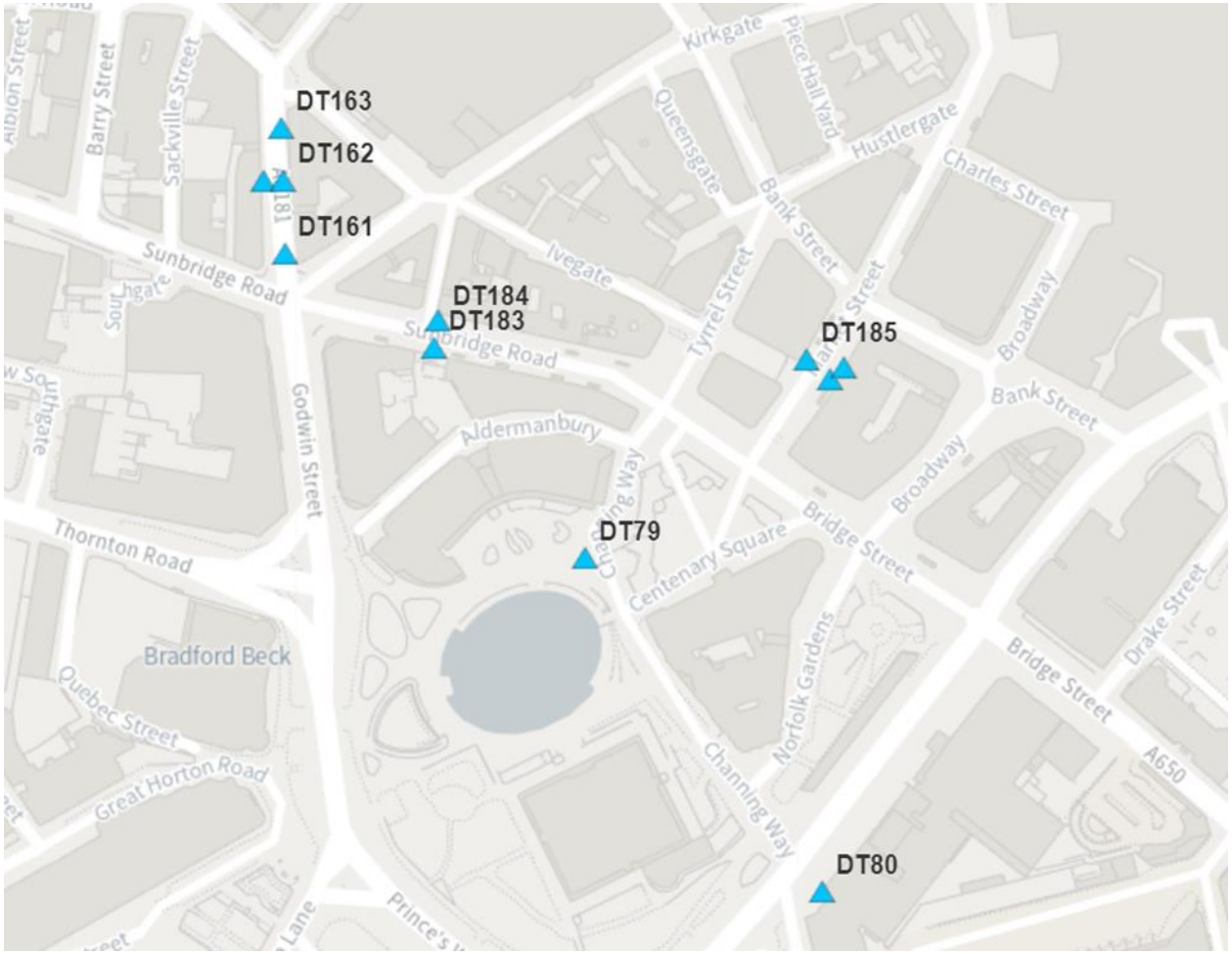


Figure D.14 – Map of Non-Automatic Monitoring Sites in the city centre



Site DT80 currently not in operation due to roadworks

Figure D.15 – Map of Non-Automatic Monitoring Sites in Ilkley

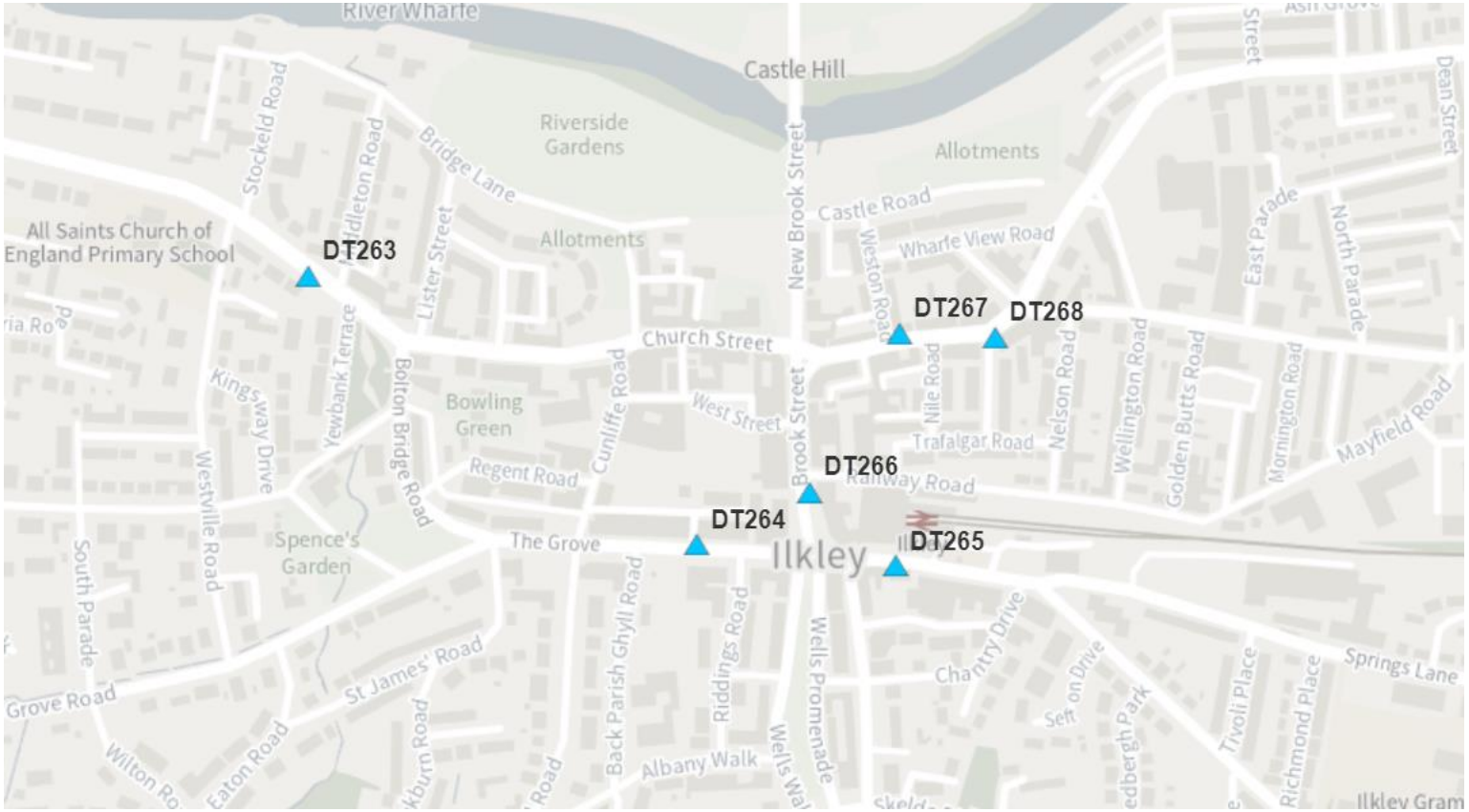


Figure D.16 – Map of Non-Automatic Monitoring Sites around Keighley

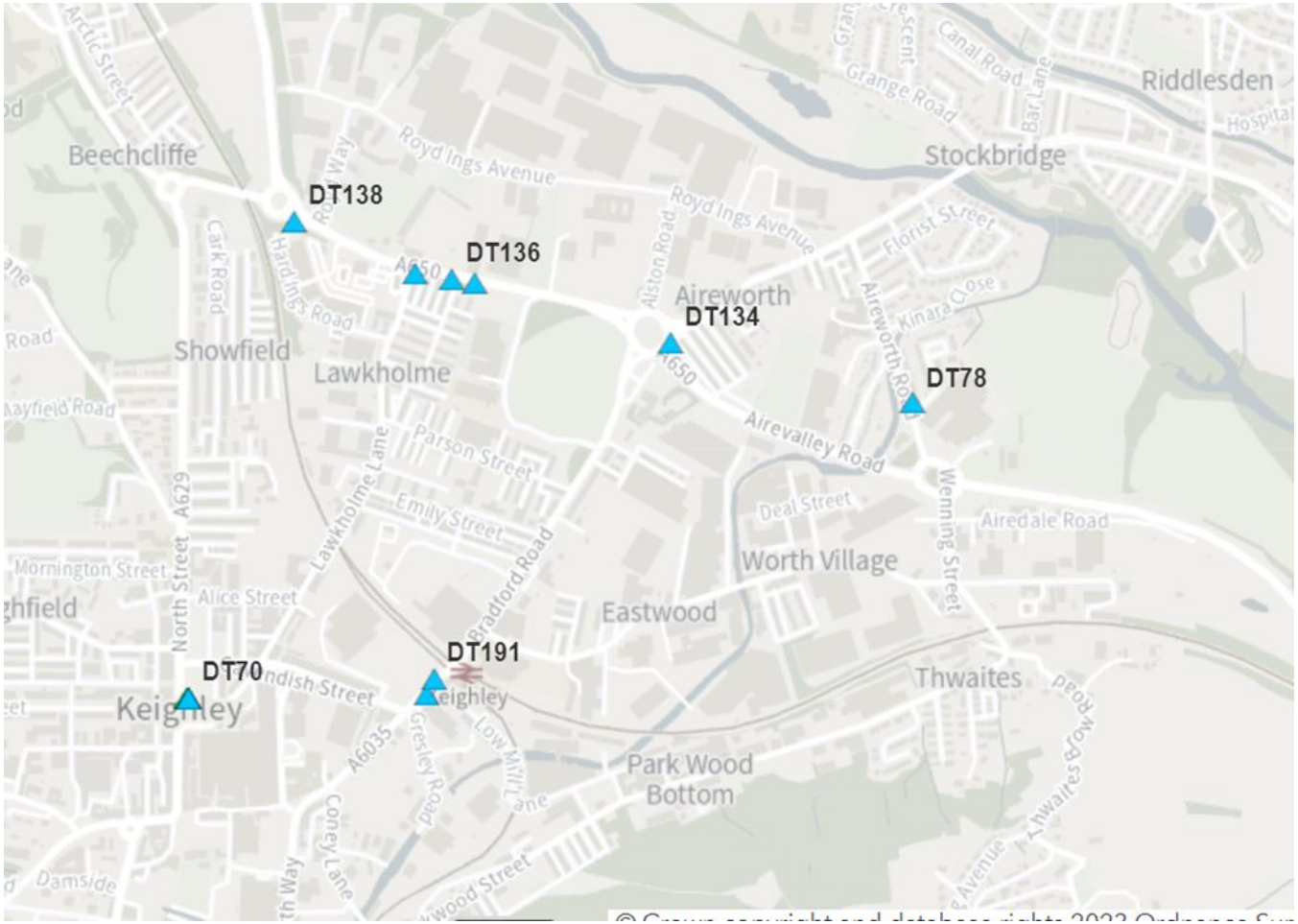
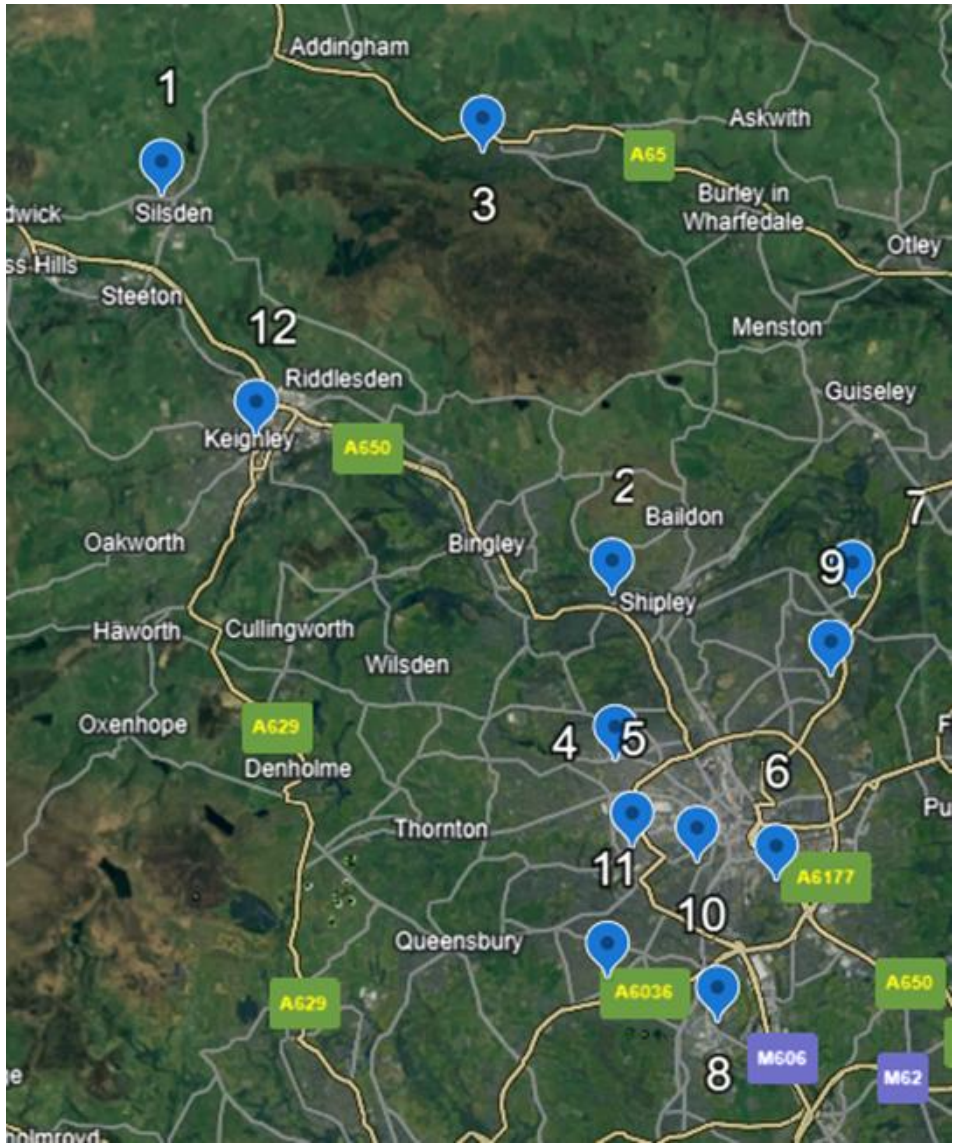


Figure D.17 – Map of Bradford low cost sensor network



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[13]

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

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

Appendix F – Summary of domestic solid fuel research questionnaire undertaken by Sheffield University

Understanding Solid Fuel Burning in Bradford Homes

Particulate matter is made up of small pieces of solid materials or droplets of liquids that are in the air. These particles are harmful to human health such as increasing the chance of developing respiratory and heart diseases and lung cancer. In the UK, burning solid fuels (e.g. wood, briquettes, smokeless coal) in the home is the largest source of fine particulate matter (called PM2.5). It is estimated that over 3.8 million deaths worldwide are due to air pollution caused by burning solid fuels (World Health Organization, 2021). In the current research, we interviewed 30 people living in Bradford who burn solid fuel in their homes, to explore the ways in which they burn solid fuels, whether they are aware of and follow government regulations on solid fuel burning, the reasons they burn solid fuels and what might help or make it difficult to reduce or stop burning solid fuels.

Summary of Recommendations

Based on our findings, which are described in more detail on the next page, we recommend that local councils provide their residents with:

- Information on the impact of burning solid fuels on health. However, care should be taken to mitigate the impact of such recommendations on households who do not have an affordable alternative to heat their home.

- Easier to find and more personalised guidance to help them to follow government regulations on solid fuel burning.

Who we spoke to

- The majority of people we interviewed were White and educated to university undergraduate degree level or higher, and just over half identified as female.
- Around half lived in a smoke control area (an area where you can only use certain types of solid fuel, unless you have an ‘exempt’ solid fuel burning appliance)
- Most people had only one solid fuel burning appliance (e.g., wood or coal burning stove) in their home, and most had the appliances installed after they moved to their home
- Most people had received training or other information on burning solid fuels. Most commonly, the appliance was demonstrated in person (e.g., by the installer) or they had read written instructions.
- Most people burned solid fuels daily during winter and less frequently during autumn/spring, most commonly in the evening, in the room where they relax.
- Most people reported worrying about money either never or only sometimes, and all felt warm enough in their home on a typical winter day either some or all of the time.

What we found

People had positive emotions and attitudes towards burning solid fuels. Overall, burning solid fuels was associated with positive emotions (comforting, cosy, relaxing, inviting) and fond memories (spending time with family and friends). Around a third of people we talked to thought that burning solid fuels was seen as positive by the general public.

People viewed solid fuel burning as an environmentally sustainable heating method that was unlikely to affect their health. Most people thought that solid fuel burning was a sustainable method for heating their home. A majority of people described that environmental considerations and the look of the appliance were important when buying their solid fuel burning appliance. Air pollution appeared less of a concern, as fewer than a third considered the appliance's emission rate when purchasing. Most people believed that solid fuel burning had little impact on their health.

People thought they were unlikely to stop burning solid fuels in the future because of the cost and environmental impact of other heating methods. Most people reported that they were unlikely to change their solid fuel burning behaviours in the future. The cost of using alternative heating methods and their impact on the planet were the most frequently reported barriers to stopping burning solid fuel.

People did not always have good knowledge of government regulations on solid fuel burning. Most people knew what a smoke control area was, but almost half did not know what 'authorised fuels' and 'exempt appliances' were. A similar number did not know that giving off smoke from a chimney can result in a Fixed Penalty Notice or Nuisance Abatement Notice. While half the people we spoke to reported that they used DEFRA-approved and/or Eco Design Ready solid fuel appliances, just under a third didn't know whether they had one of these appliances. However, most people stored solid fuels correctly in a dry covered space.

Government regulations on solid fuel burning were seen as confusing and hard to find. Some people actively searched for information about solid fuel burning regulations, but found it difficult to work out whether they lived in a smoke control area based on existing maps and information, and which fuels were ok to use in which areas and which appliances.

People thought that current solid fuel burning regulations were ineffective. Some people believed that solid fuel burning regulations were needed to reduce pollution, but there was also a lot of scepticism. Some people felt that regulations were based on untruths or ulterior motives, while others felt that it was difficult to check whether people were following current regulations, and that ignoring the regulations was unlikely to result in enforcement.

Government regulations influenced which solid fuel burning appliances people bought, but people did not always follow regulations when using their appliance. Some people checked the regulations to help them decide what appliance to buy. However, of those people who knew whether they lived in a smoke control area and what type of appliance they had, fewer than half burned the correct fuels for their particular area and appliance.

Recommendations for Local Councils

We recommend that local councils focus on providing:

More information to the public about the health dangers of burning solid fuels: This may include advice that people reduce their use of solid fuel burning appliances if they have another affordable source of heating. It is important to note that the results from the current report came mainly from people who felt relatively financially secure. Households who do not have an affordable alternative to heating their home by burning solid fuels may instead be supported to burn solid fuels as safely as possible, by following government regulations.

Easy to access and more personalised guidance on how government regulations apply to individual households, including:

- Whether their home is in a smoke control area
- What DEFRA-approved/ Eco Design Ready stoves are, and how to tell if they have one
- What types of solid fuels can be burnt in their specific appliance in their location
- How the Council monitors and enforces solid fuel burning regulations

As most people had their solid fuel burning appliance installed after they moved into their home, local councils may explore whether solid fuel retailers and installers can be supported to provide personalised guidance to people on what solid fuels they can burn in their appliance and area.

Report authors and acknowledgements

Research report conducted by:

Dr Chantelle Wood, University of Sheffield; Dr Denisa Genes, University of Sheffield; Elizabeth Bates, City of Bradford Metropolitan District Council; Professor Jacqui Hamilton, University of York; Professor Rosie McEachan, Born in Bradford, Bradford Teaching Hospitals NHS Foundation Trust; Dr Erika Ikeda, Born in Bradford, Bradford Teaching Hospitals NHS Foundation Trust

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
CASP	Clean Air Schools Programme
CAZ	Clean Air Zone
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
HGV	Heavy Goods Vehicle
JAQU	Joint Air Quality Unit
LAQM	Local Air Quality Management
LEVI	Local Electric Vehicle Infrastructure (funding)
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.