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

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Executive Summary: Air Quality in Our Area

Air Quality in Hastings Borough Council

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.

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[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

The key pollutants of concern in Hastings Borough are nitrogen dioxide (NO_2) and fine particulates ($PM_{2.5}$ and PM_{10}), with road traffic emissions being the principal source of local emissions.

Hastings Borough Council has a network of air quality monitoring across the Borough, including one continuous monitoring station, which monitors NO_2, PM_{10} and $PM_{2.5}$, and passive NO_2 diffusion tubes. In 2023, passive NO_2 diffusion tube monitoring occurred at 14 distinct locations. Defra also have also recently gained planning permission (ref: HS/PR/23/00373) to install a new continuous monitoring station on the West Hill Open Space, which will add to our understanding of pollution in the Borough.

In 2023, no exceedances of the UK Air Quality Standards (i.e., legal limits) were monitored at any location. Furthermore, there is a long-term trend showing a decline in measured concentrations of NO_2. For example, in 2023, measured annual mean concentrations of NO_2 were lower than 2019 at all sites, and all but two sites in 2022. Air quality is improving across much of the UK, where road traffic is the major source of emissions, due to the replacement of older, "dirtier" vehicles with those with "cleaner" engines, including electric vehicles. As such, these results are in line with national trends.

There has been no clear downward trend in concentrations of PM_{10} in the borough and levels have remained relatively consistent. Although, PM_{10} levels in 2023 and 2022 were higher than 2019. As such, the council will continue to monitor PM_{10} to better understand the long-term trend and to identify measures to reduce emissions. Hastings Borough Council are also taking active steps to better control emissions of dusts and other particulate matter, associated with construction, bonfires and permitted installations.

The national trend for PM_{10} and $PM_{2.5}$ is more complicated than the trend for NO_2, with decreases in PM_{10} and $PM_{2.5}$ emissions from vehicle exhausts and industry somewhat offset by increases in emissions from domestic sources (emissions of $PM_{2.5}$ from domestic wood burning increased by 124% between 2011 and 2021)[3]. Nevertheless, average exposure to $PM_{2.5}$ across the borough, calculated by the Office for Health Improvement and Disparities, was below the government's 2040 target of 10μg/m^3 and below the average for the rest of England and the Southeast.

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[3] Defra. Emissions of air pollutants in the UK – Particulate matter (PM10 and PM2.5), February 2023: https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25

It should be stressed, however, that there are no safe levels of some pollutants and Hastings Borough Council, with Sussex Air, continues to work to reduce pollution levels to improve the health and wellbeing of its residents and visitors, implementing its Air Quality Strategy.

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 Road to Zero[4] 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.

Core actions in 2023 to improve air quality in the borough include the continued maintenance of the air quality monitoring programme. Hastings Borough Council also continued to support the Sussex Air Quality Partnership, which aims to improve air quality across Sussex. Hastings Borough Council has supported improving air quality and reducing exposure by:

- Supporting the co-ordination and delivery of a high standard of air quality evidence base (monitoring) in Sussex.
    - o Supporting the co-ordination and delivery of strategic work and projects to improve air quality in Sussex, with Sussex Air. In May 2023, Hastings Borough Council's HT1 began monitoring $PM_{2.5}$.
    - o A planning application (HS/PR/23/00373) for a DEFRA continuous $PM_{2.5}$ monitoring station on the West Hill Open Space, was granted permission by Hastings Borough Council.
- Providing information and advice to the public, through the website and other channels.

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

- An enforcement led approach to the determination of smoke nuisance/ burning of trade waste and dust nuisance complaints in the Borough.

Conclusions and Priorities

This ASR confirms that levels of PM_{10}, $PM_{2.5}$ and NO_2 continue to comply with the UK Air Quality Objectives.

In 2023, there were decreases in NO_2 and PM_{10} concentrations at all sites, but two, when compared to 2022 monitoring data, which follows the long term national and local trends.

Hastings Borough Council's priorities for the coming year are:

- Continue to maintain the air quality monitoring programme.
- Continue to support the Sussex Air Quality Partnership.
- Consider the outcomes of the Sussex Taxi Survey, designed to identify the barriers to electric vehicle take up, and work with drivers to remove those barriers.
- Update the council's website to account for info on wood burning and other measures set out in the Air Quality Strategy.
- Support positive air quality outcomes associated with the Hastings Town Centre Public Realm and Green Connections Project (The Hastings town centre redevelopment).
- Conduct a review of the Air Quality Strategy.
- Support the installation of DEFRA's $PM_{2.5}$ monitor on the West Hill Open Space.
- Consider the location of the existing air quality monitoring network in the context of the Queensway Gateway Link Road, which received £2.5 million in funding in March 2024.

Hastings Borough Council, working with our partners at Sussex Air, did not identify any new major emission sources in 2023, which have the potential to *significantly* impact air quality in the borough. Several major planning applications were granted permission in 2023, which will have a minor influence on air quality.

Unfortunately, the successful air pollution awareness raising project with Sustrans is likely to come to an end in East Sussex, in the absence of further funding.

Local Engagement and How to get Involved

Sussex Air is an overarching body which coordinates the response to air quality in Sussex, including providing bids to Defra. In collaboration with the Sussex Air Quality Partnership,

Sustrans are currently working with community groups in Hastings to promote air quality and active travel. Sustrans continue to arrange Air Quality Workshops and air quality rides across Sussex. They continue to liaise with the Southeast Community Rail Partnership in Hastings and are working with *Active Hastings Youth Link Worker* to plan activities around Air Quality during Sustrans led rides.

Road vehicles are a major source of many pollutants in urban areas, including Hastings. In 2021, they produced over 27% of the emissions of Nitrogen Oxides (NOx) in the UK[5]. As such, before using your car, ask yourself:

- Do I really need to make this journey?
- Could I walk or cycle instead of taking the car?
- Could I take a bus, or train or carpool?
- Are the levels of air pollution already too high today?

If you must drive:

- Drive smoothly. You'll save fuel (and money), and your engine will also pollute less.
- Don't rev your engine unnecessarily.
- Maintain your car. Keep the engine properly tuned and the tyres at the right pressure; and
- Turn off the engine when your car is stationary.

At home:

- Buy water-based or low-solvent paints, varnishes, glues and wood preservatives;
- Avoid burning solid fuels, if possible;
- Avoid lighting bonfires, but if you must, don't light them when pollution levels are high or while the weather is still and cold;
- Only burn dry material and never burn household waste, especially plastic, rubber, foam or paint;
- Levels of pollution can be quite high on bonfire night and other events/festivals with bonfires, and sensitive people, including people with respiratory conditions, may notice some effects;

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[5] https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-nitrogen-oxides-nox

- However, exposure can be considerably reduced by remaining indoors and keeping windows closed;
- Be aware of internal sources of pollution (e.g. candles, cleaning products and gas stoves) and make sure that your home is sufficiently ventilated when using these products,

[Further information on the health effects of air pollution](#) can be found on the Government's website.

Further information on how you can [improve air quality is provided by Sussex Air](#).

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health and Licensing Service, Hastings Borough Council with the support and agreement of the following officers and consultants:

Scott Thirkettle, Senior Environmental Health Officer, Environmental Health and Licensing Service, Hastings.

Harley Parfitt – [Greenavon Air Quality Consultants](#)

This ASR has been approved by:

> **Ian Wheeler**, Environmental Health and Licensing Manager, Hastings Borough Council

This ASR has been sent to the Director of Public Health, East Sussex County Council for their information.

If you have any comments on this ASR please send them to Scott Thirkettle at:

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1 Local Air Quality Management

This report provides an overview of air quality in Hastings Borough Council 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 Hastings Borough Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

Hastings Borough Council does not have any declared AQMAs. The Bulverhythe AQMA, which was declared in 2003 due to exceedances of the 24-hour mean Air Quality Objective for PM_{10} (35 exceedances of 50 μg/m^3 per annum), was revoked in April 2017. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at: Defra UK-Air webpage AQMA list.

Hastings Borough Council has an Air Quality Strategy in place to improve air quality and ensure continuing compliance with the national air quality objectives. Hastings Borough Council's Air Quality Strategy can be found online, on the Air Quality Management page.

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

Defra provided detailed commentary of last year's ASR, suggesting the following measures which should be considered, in terms of air quality monitoring and reporting:

1. *"Measure 8 has been included in Table 2.1 of the report but not table 2.2 of the excel sheet. Many of the measures from these tables are also missing key information such as approximate costs and estimated / actual completion dates. The comments could also use more details to provide more context as to the current status of the measure, to verify if the measure is on track for completion by the estimated completion date."*

In this year's ASR, a comprehensive review of Table 2.2 has been carried out and further detail on the status of current measures has been supplied.

2. *"HBC have included the Public Health Outcomes Framework D01 indicator within their report, as well as a comparison to England and the South-East region. This is an example of good practice and helps provide context for measures that tackle $PM_{2.5}$. However, Defra recommends that Directors of Public Health approve draft ASRs. Sign off is not a requirement, however collaboration and consultation with those who have responsibility for Public Health is expected to increase support for measures to improve air quality, with co-benefits for all. Please bear this in mind for the next annual reporting process."*

This year's draft ASR was sent to Hastings' Director of Public Health for approval. At the time of writing, no response from the Director of Public Health has been received.

3. *"The council should consider using their automatic monitoring site to determine a local bias adjustment factor by adding a triplicate location. Doing so could provide a more accurate adjustment factor to apply to tubes within the district. It would also be helpful to include a screenshot of the national bias adjustment factor calculation spreadsheet for clarification."*

In November of 2023, there diffusion tubes (47 & 81 Bexhill Road, & 104 Bohemia Road) were relocated to the Bulverhythe Automatic Monitoring Station (HT1) for the purposes of deriving a local bias adjustment factor. This ASR includes a screenshot of the national bias adjustment factor calculation spreadsheet to allow Defra to verify the use of the adjustment factor.

4. *"The council is clearly dedicated to their measures to address $PM_{2.5}$. As they have stated their intentions to install a new $PM_{2.5}$ monitor in response to their calculation of the annual mean $PM_{2.5}$ concentration which was reported to be close to the AQO. However, more clarification could be given to how the average annual $PM_{2.5}$ mean was calculated, it is*

recommended that the methodology for this calculation be included for verification, possibly as a separate appendix."

Further details of the calculation have been supplied in Section 3.2.3.

5. *"Good presentation and discussion of the trends was reported for all pollutants providing detail as to the potential sources which result in increases in concentrations.*

6. *The Council have shown clear evidence of local engagement presenting mitigation measures and alternatives for how residents can help reduce their own contribution to air pollution.*

7. *The Council have clearly stated that their deployment is in line with the Defra calendar providing good reasoning when this was not the case and explaining the effect of this on the reported monthly concentrations."*

The same good practice has endeavoured to be followed in this year's ASR.

Hastings Borough Council has taken forward several 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.. Twelve measures are included within Table 2., with the type of measure and the progress Hastings Borough Council 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..

More detail on these measures can be found in Hastings Borough Council's Air Quality Strategy.

The measures in Table 2.2 generally represent ongoing efforts to increase awareness of air pollution and minimise emissions. As such, no measures are predicted to come to completion. Unfortunately, the successful awareness raising project with Sustrans is likely to come to an end in East Sussex, in the absence of funding.

Hastings Borough Council's priorities for the coming year are:

- Support the active travel and air quality improvements delivered as part of the Town Centre public realm and green connections regeneration project;
- Reduce number of smoke/burning & construction dust nuisance complaints through public engagement and enforcement, particularly in the revoked AQMA area;
- To achieve, at least, 75% data capture for the new PM2.5 monitor in 2024 and analyse the results.

Hastings Borough Council worked to implement these measures in partnership with the following stakeholders during 2023:

- East Sussex County Council
- Sussex Air Quality Partnership
- Sustrans

East Sussex County Council are also heavily involved in projects that could help to improve air quality in Hastings. For example, they were involved in a Strategic Outline Business Case for proposed upgrades to the Kent and East Sussex rail network. The following two proposed improvements relate to rail in Hastings:

- partial line speed improvements between Rye and Ore and between Bexhill and Hampden Park; use of bi-mode diesel or battery trains; and
- full scale line speed improvements; Marshlink third rail electrification; electric trains; diversion of A259 at Star/Guldeford level crossings.

As these projects are not on a national priority list of rail projects, local MPs and local authorities in East Sussex and Kent are working collaboratively to explore opportunities to lever private sector finance/investment to fund the delivery of the rail schemes identified in the study.

Regarding the implementation of measures which the Sussex Air Quality Partnership and Hastings Borough Council have direct control over, Hastings Borough Council anticipates facing no significant challenges or barriers to implementation in 2024. However, funding issues will likely be bringing the Sustrans Air Quality Project to an end in Hastings at the end of 2024.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Introduced	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	Hastings Town Centre Public Realm and Green Connections Project	Health Protection	Redevelopment of the town centre space	2023	2026	HBC	HBC - ESCC	UK Gov	Funded	£10 Million as part of the Town Deal £24.3 Million	Ongoing	Low	Active travel and Air quality improvements delivered as part of the Town Centre public realm and green connections regeneration project	Planning and concept design and engagement complete. Design stage initiated and ongoing.	-
2	Managing and analysing the $PM_{2.5}$ monitoring data of HT1.	'-	Other	2024	Ongoing	HBC	Defra	No	Funded	< £10k	Ongoing	NA	To achieve 75% data capture of $PM_{2.5}$ in 2024	$PM_{2.5}$ installed and commissioned in Nov. 23. Monitoring in progress and ongoing.	-
3	Public engagement and enforcement around nuisance related complaints.	Health Protection		2024	Ongoing	HBC	HBC	No	Funded	< £10k	Ongoing	Low	Number of complaints / website updates etc	New measure for 2024	With particular emphasis around revoked AQMA area.
4	Promote clean burning information on Sussex Air website via HBC web traffic	Health Protection	Other	2022	Ongoing	Sussex-Air	HBC	No	Funded	< £10k	Ongoing	Low	Reduced PM10 concentrations / fewer smoke complaints	Promoting use of smokeless fuels and reduction of solid fuels.	-
5	Sussex Air Quality Alert	Health Protection	Other		Ongoing	Sussex-Air	Sussex-Air	No	Funded	< £10k	Ongoing	NA	Increase the number of signups for Air Alerts by 10%	Promote take up through MyHastingsMatters weekly e-newsletter.	Community Engagement
6	Increase the use of electric vehicles and charging through the network	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV, recharging, Gas fuel recharging		Ongoing	Sussex-Air	-	No	Funded	>£10k	Ongoing	Low	Uplift in physical EV infrastructure locations and EV charging point in HBC	4 additional EV charging locations installed and commissioned during 2023.	Funding
7	Households and building trade to avoid	Environmental Permit	Other		Ongoing	HBC Env-protection	HBC	No	Funded	< £10k	Ongoing	Low	Reduce number of smoke/	Discourage burning of waste through bonfires.	Community Engagement

Measure No.	Measure Title	Category	Classification	Year Introduced	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
	fires for waste disposal in revoked AQMA to reduce levels of PM$_{2.5}$												burning nuisance complaints in revoked AQMA area		
8	Post Sussex Taxi Survey Engagement	Promoting Low Emission Transport	Taxi emission incentives		2024	HBC	Sussex-Air	Yes	Funded	< £10k	Ongoing	Low	Engage with taxi trade following completion of survey to promote take up of EV taxis	Beginning in 2024	-
9	Hastings Borough Council EV fleet Upgrade,	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles		2023	HBC	HBC	No	Funded	£100k - £500k	Ongoing	Low	Number of EV in HBC fleet	7 out of 26 HBC vehicles are electric vehicles	-
10	Review of AQS to be completed	Health Protection	Other	2024	Commenced in 2024	HBC	HBC	No	Funded	£1K	Ongoing	Low	Complete review of Air Quality Strategy	Review Commenced	-
11	Planning consultations	Health Protection	Other	2023	Ongoing	HBC	HBC	No	Funded	£1K	Ongoing	Low	Responses to major development planning application in accordance with Air quality and emissions mitigation guidance for Sussex (2021)	79 planning consultations completed in 2023	-
12	Construction Dust	Health Protection	Other	2023	Ongoing	HBC	HBC	No	Funded	£1K	Ongoing	Low	Construction dust – Hastings has seen a increase in larger construction sites across the borough which are frequently the subject of dust nuisance complaints.	Reduce construction dust complaints through the planning consultation regime.	-

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[6], 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.

Hastings Borough Council began monitoring PM$_{2.5}$ in May 2023 and an annual average concentration of 7.8 μg/m^3 was derived. This shows good agreement with the estimate from Public Health England. Public Health England estimates that average PM$_{2.5}$ concentrations across the borough were 6.5 μg/m^3 in 2021, with 4.3% of mortality associated with particulate air pollution in 2022. This information is available from Public Health England's Public Health Data webpage.

The mortality calculated for Hastings Borough Council is slightly lower than that calculated for 2022, for South East England (5.7%) and England (5.8%) as a whole.

Hastings Borough Council continues to work with Sussex Air and the East Sussex County Council Public Health team to address PM$_{2.5}$. Several of the existing measures in Table 2.2 directly address PM$_{2.5}$ concentrations, including investigating dust complaints and the promotion of clean burning. In addition, Hastings Borough Council continues to investigate smoke nuisance in line with the requirements of the Environmental Protection Act (1990).

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

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Hastings Borough Council undertook automatic (continuous) monitoring of NO_2, PM_{10} and $PM_{2.5}$ at one site during 2023. The automatic monitoring site is situated at Bulverhythe known as Hastings 1 (HT1) and forms part of the Sussex Air Quality Network. Table A.1 in Appendix A shows the details of the automatic monitoring site, with Appendix F showing various analytical plots.

The Sussex Air 'Air quality monitoring page' presents automatic monitoring results for Hastings Borough Council, with automatic monitoring results also available through the 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

Hastings Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at fifteen distinct locations during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

It should, however, be noted that monitoring ceased at the end of October 2023 at diffusion tube sites DT7, DT8 and DT13, due to consistently low concentrations and the presence of other diffusion tubes in the area.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO$_2$)

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

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

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

No exceedances of the annual or 1-hour mean air quality objectives were measured in Hastings Borough, in 2023.

Appendix F shows that measured concentrations of NO$_2$ at HT1 are likely influenced by road traffic emissions, with peaks in pollution occurring during rush hour, and when the wind is from the east, blowing parallel to the A259.

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

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

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

No exceedances were recorded during 2023. Concentrations above 50 µg/m^3 were recorded only 3 times throughout the year.

Appendix F shows that measured concentrations of PM_{10} at HT1 may be highly influenced by emissions from the business park/ industrial estate and rail depot to the southeast and another rail depot to the southwest.

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

Hastings Borough Council began monitoring $PM_{2.5}$ in May 2023. An annual average concentration of 7.8µg/m^3 was measured. This is below the UK AQS of 20µg/m^3 and the 2040 target value of 10µg/m^3.

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)
HT1	Hastings-Bulverhythe	Roadside	577633	108726	NO2,PM10,PM2.5	No	Chemiluminescent / TEOM / BAM	5	3	1.7

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)
1	St Lukes, Alma Terrace	Roadside	580037	110902	NO2	No	1.0	1.0	No	2.0
2	Carlise Parade	Roadside	581496	109288	NO2	No	5.0	1.0	No	2.5
3	Manor Road	Roadside	582223	110361	NO2	No	0.0	10.0	No	2.5
4	Ore Church	Roadside	583610	111325	NO2	No	0.0	2.0	No	2.5
5	Harley Shute Road	Roadside	578382	109601	NO2	No	10.0	1.0	No	2.0
6	The Boat, Bexhill Road	Roadside	576770	108101	NO2	No	15.0	1.5	No	2.5
7	81 Bexhill Road	Roadside	578500	108771	NO2	No	0.2	1.5	No	2.5
8	47 Bexhill Road	Roadside	578637	108798	NO2	No	1.5	2.8	No	2.0
9	71 Bexhill Road	Roadside	578532	108776	NO2	No	0.5	0.5	No	2.5
10	139 Bexhill Road	Roadside	578290	108819	NO2	No	1.5	2.0	No	2.0
11	Railway Bridge	Roadside	578447	108794	NO2	No	10.0	3.0	No	2.5
12	Grosvenor Gardens	Roadside	578946	108746	NO2	No	10.0	0.5	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)
13	104 Bohemia Road	Roadside	580252	110058	NO2	No	0.5	1.5	No	2.0
14	116 Bohemia Road	Roadside	580246	110064	NO2	No	0.5	1.5	No	2.0
15	Hastings-Bulverhythe	Roadside	577633	108726	NO2	No	5.0	3.0	Yes	1.7
16	Hastings-Bulverhythe	Roadside	577633	108726	NO2	No	5.0	3.0	Yes	1.7
17	Hastings-Bulverhythe	Roadside	577633	108726	NO2	No	5.0	3.0	Yes	1.7

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (μg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
HT1	577633	108726	Roadside	92	92	14.9	10.7	11	12.8	9.4

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

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

☒ **Where exceedances of the NO₂ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023**

Notes:

The annual mean concentrations are presented as μg/m³.

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

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

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

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

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

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
1	580037	110902	Roadside	92.3	92.3	21.0	14.4	18.1	16.6	15.6
2	581496	109288	Roadside	82.7	100.0	23.7	15.8	19.3	19.1	16.9
3	582223	110361	Roadside	76.9	100.0	14.4	10.0	12.5	10.9	12.6
4	583610	111325	Roadside	67.3	100.0	24.9	17.4	20.7	20.0	17.7
5	578382	109601	Roadside	82.7	100.0	24.9	20.6	23.6	24.1	17.3
6	576770	108101	Roadside	90.4	100.0	28.0	15.4	19.4	18.8	20.7
7	578500	108771	Roadside	67.3	67.3	33.7	26.5	27.4	27.3	23.7
8	578637	108798	Roadside	82.7	82.7	28.8	19.4	22.9	21.9	19.9
9	578532	108776	Roadside	76.9	76.9	33.9	23.3	26.1	26.5	23.7
10	578290	108819	Roadside	90.4	90.4	24.1	15.8	18.8	18.5	15.1
11	578447	108794	Roadside	92.3	82.7	24.0	17.4	20.4	19.1	18.9
12	578946	108746	Roadside	73.1	92.3	21.6	14.9	17.3	16.4	15.1
13	580252	110058	Roadside	73.1	73.1	33.0	21.2	25.3	24.2	22.4

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
14	580246	110064	Roadside	100	100.0	30.2	20.5	24.1	23.8	21.6
15	577633	108726	Roadside	100	17.3	-	-	-	-	13.0
16	577633	108726	Roadside	100	17.3	-	-	-	-	12.6
17	577633	108726	Roadside	100	17.3	-	-	-	-	12.8

☒ **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%).

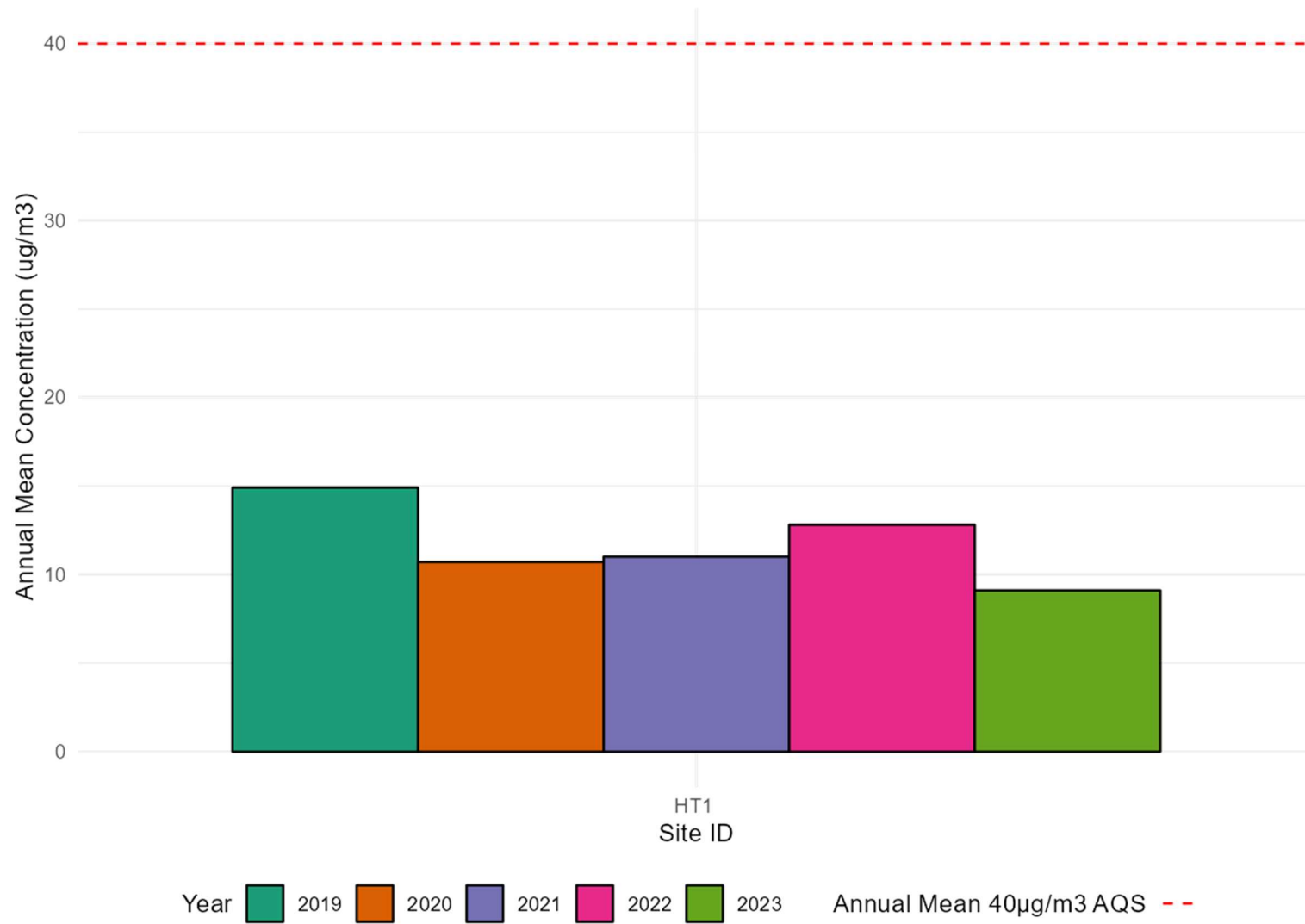**Figure A.1 – Trends in Annual Mean NO₂ Concentrations (HT1)**

Figure A.2 – Trends in Annual Mean NO₂ Concentrations (Diffusion Tubes)
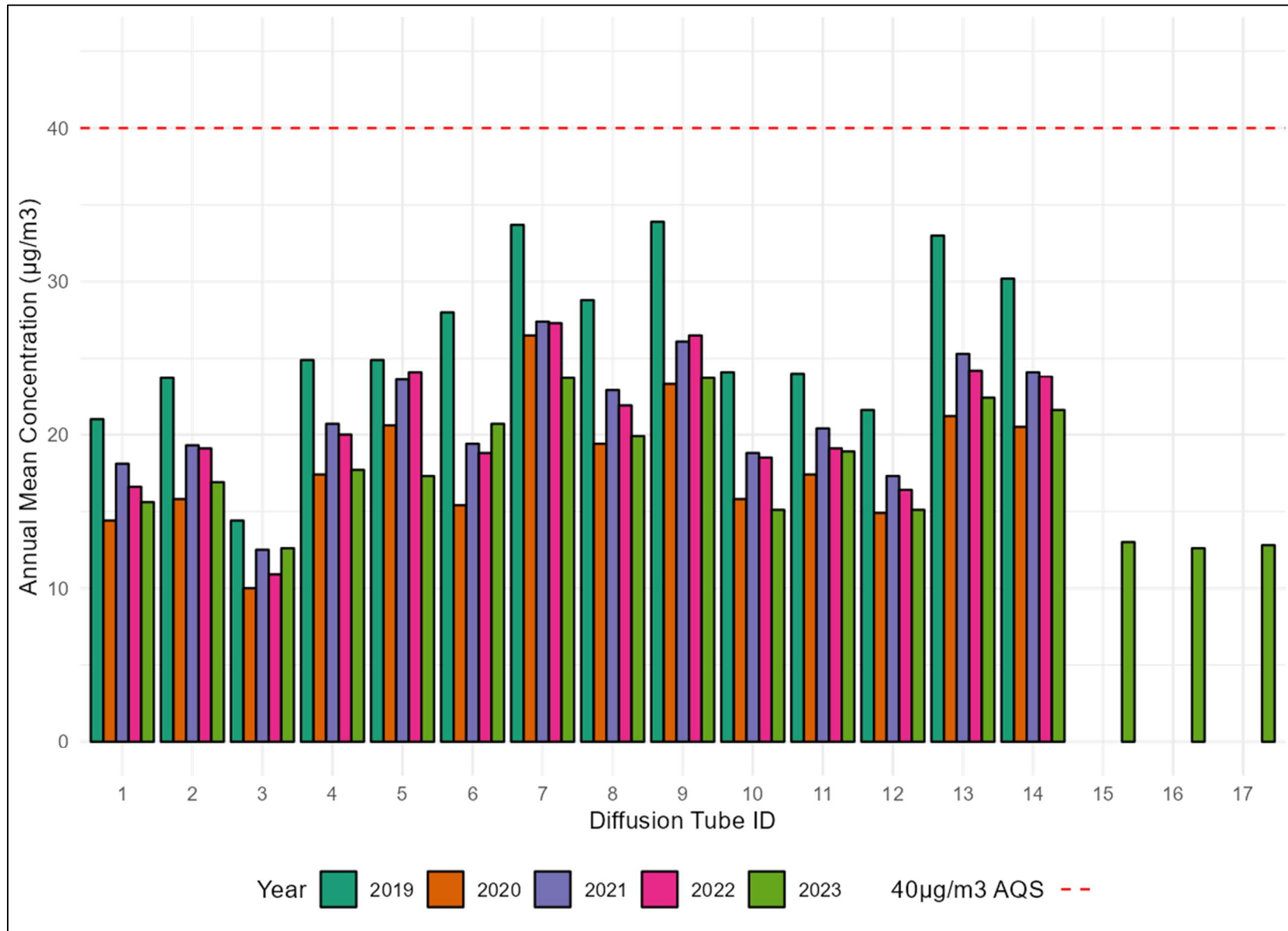
Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
HT1	Roadside	577633	108726	92	92	0	0	0	0	0

Notes:

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

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A.6 – Annual Mean 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
HT1	577633	108726	Roadside	88.5	88.5	21.8	21.3	19.5	23.5	22.7

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

Notes:

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

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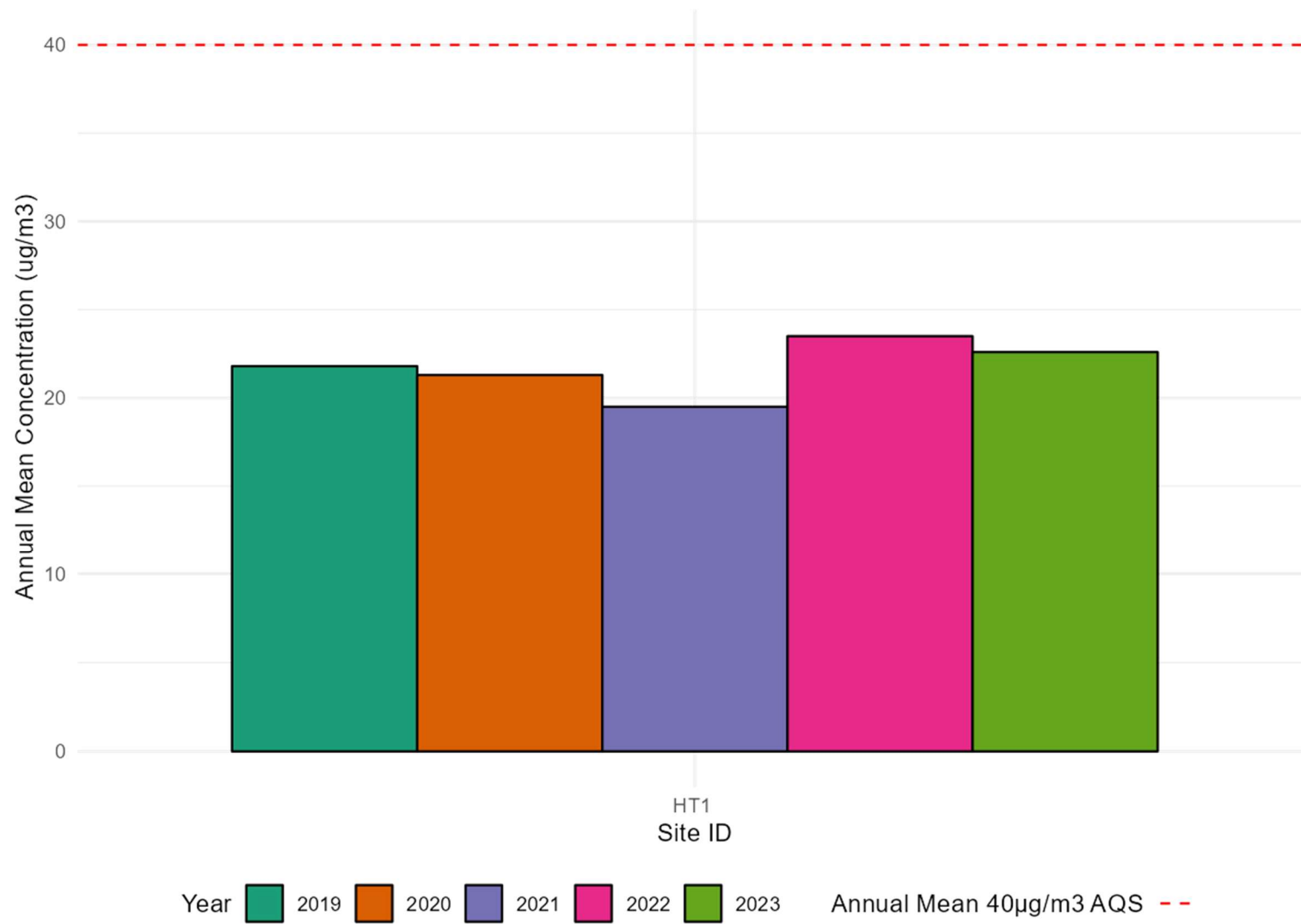
Table A.7 – 24-Hour Mean PM$_{10}$ Monitoring Results, Number of PM$_{10}$ 24-Hour Means > 50µg/m^3

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
HT1	577633	108726	Roadside	90.1	90.1	4	1	3	5	3

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%).

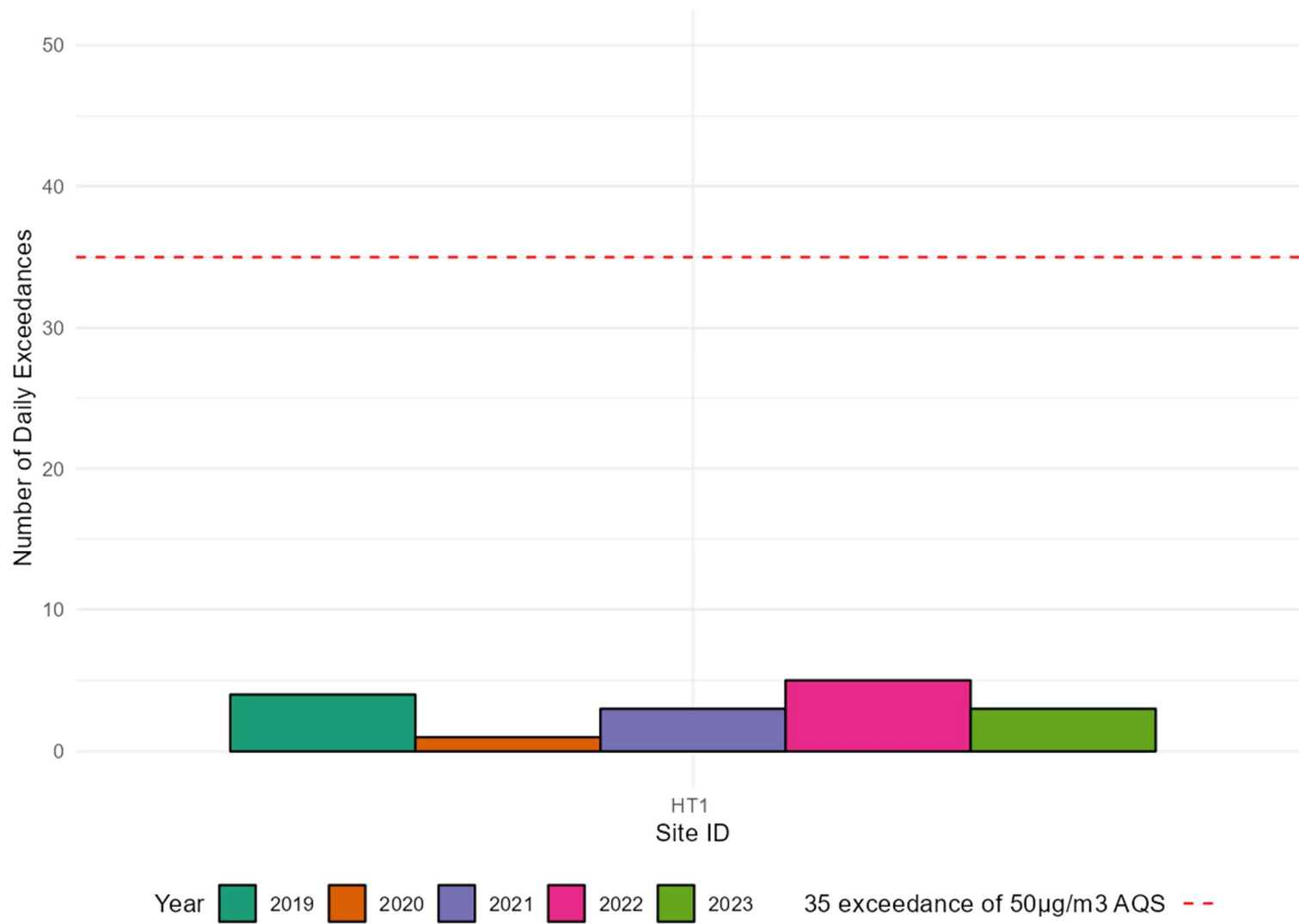**Figure A.4 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³**

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
HT1	577633	108726	Roadside	75	68.6	-	-	-	-	**7.8**

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

Notes:

The annual mean concentrations are presented as µg/m³.

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2023

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

DTID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted 0.81	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	580037	110902	23.1	25.1	20.6	17.2	15.5	15.8	16.7	16.1	18.7	20.1	23.2	Missing	19.3	15.6	-	
2	581496	109288	24.0	27.9	21.0	22.9	22.2	20.6	15.0	19.5	21.8	17.9	23.6	14.2	20.9	16.9	-	
3	582223	110361	16.3	16.8	13.4	12.2	10.7	23.4	9.0	11.6	24.3	12.6	20.4	15.5	15.5	12.6	-	
4	583610	111325	23.9	25.6	22.4	24.4	22.1	23.1	19.3	21.4	13.0	24.2	22.2	20.6	21.8	17.7	-	
5	578382	109601	24.8	25.5	20.8	21.1	17.3	18.7	19.0	19.7	22.6	23.5	23.7	19.4	21.3	17.3	-	
6	576770	108101	18.4	31.8	26.4	27.0	24.7	27.2	26.5	26.1	28.6	24.7	25.5	20.1	25.6	20.7	-	
7	578500	108771	44.0	35.1	29.5	34.0	24.3	26.6	22.5	27.8	Missing	Missing	Ceased	Ceased	30.5	23.7	-	
8	578637	108798	24.8	28.4	28.7	26.6	21.1	23.9	21.7	22.7	28.5	19.4	Ceased	Ceased	24.6	19.9	-	
9	578532	108776	31.3	Missing	28.8	33.7	25.1	26.6	24.2	28.0	33.4	Missing	31.9	Missing	29.2	23.7	-	

DTID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted 0.81	Annual Mean: Distance Corrected to Nearest Exposure	Comment
10	578290	108819	20.1	26.7	21.8	21.0	17.7	Missing	15.8	0.5	22.5	20.0	22.9	16.2	18.7	15.1	-	
11	578447	108794	19.0	29.1	25.8	23.6	Missing	19.0	15.8	Missing	24.1	25.6	27.5	24.2	23.4	18.9	-	
12	578946	108746	22.7	23.0	18.7	18.9	Missing	16.1	14.6	16.3	19.5	17.4	22.2	15.7	18.6	15.1	-	
13	580252	110058	30.8	32.3	29.5	30.1	26.1	Missing	20.6	26.9	31.6	20.9	Missing	Missing	27.6	22.4	-	
14	580246	110064	30.0	31.4	27.7	27.5	22.9	21.7	20.4	25.8	31.6	25.9	35.2	20.3	26.7	21.6	-	
15	577633	108726	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	17.1	15.0	16.0	13.0	-	
16	577633	108726	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	16.8	14.2	15.5	12.6	-	
17	577633	108726	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	16.9	14.8	15.9	12.8	-	

☒ **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 column**

☒ **Hastings Borough Council 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 **<u>bold and underlined</u>**.

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 Hastings Borough Council During 2023

Hastings Borough Council has not identified any major new emission sources in 2023.

One major development of over 50 dwellings was, however, granted planning permission in 2022. The links to these planning applications are as follows:

1. [HS/FA/23/00016: Erection of 71 dwellings together with access, open space, parking and landscaping.](HS/FA/23/00016)

HS/FA/23/00016 included an air quality assessment which concluded that the proposal would result in negligible changes in air quality.

Whilst the risk of significant changes in air pollution is considered low, Hastings Borough Council will consider relocating a diffusion tube in the vicinity of Harrow Lane to manage any residual risk once the final stage of the Queensway Gateway is complete. Queensway Gateway is a new road which will connect Queensway with Sedlescombe Road North (the A21) in northern Hastings/St Leonards

Additional Air Quality Works Undertaken by Hastings Borough Council During 2023

Hastings Borough Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

Hastings Borough Council's diffusion tubes are prepared and analysed by Gradko International Ltd. using the 20% TEA in water method. This laboratory takes part in the QA/QC Field Intercomparison, operated on behalf of Defra. Gradko International Ltd are a UKAS accredited laboratory.

Monitoring was completed in adherence with the 2023 Diffusion Tube Monitoring Calendar, with the exception of October and November where the tubes were exposed for five weeks and two days and three weeks and five days, respectively, instead of four

weeks and five weeks. This deviation from Defra's calendar is not considered to have a significant on measured concentrations.

Diffusion Tube Annualisation

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

Site ID	Annualisation Factor Brighton Preston Park	Annualisation Factor Lullington Heath	Annualisation Factor Canterbury	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Pollutant(s)
7	0.9996	0.9235	NA	0.9616	30.5	29.3	NO$_2$
HT1	NA	1.0293	1.0466	1.0380	7.5	7.8	PM2.5

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO$_x$/NO$_2$ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Hastings Borough Council have applied a national bias adjustment factor of 0.81 to the 2023 monitoring data. A summary of bias adjustment factors used by Hastings Borough Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.81
2022	National	03/23	0.83
2021	National	03/22	0.84
2020	National	02/21	0.81
2019	National	03/20	0.93

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:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	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 a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	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[6]**	**Bias Adjustment Factor (A) (Cm/Dm)**
Aberdeen Scientific Services	20% TEA in water	2023		Overall Factor[3] (7 studies)					Use	0.73
Edinburgh Scientific Services	50% TEA in acetone	2023		Overall Factor[3] (1 study)					Use	0.81
Glasgow Scientific Services	20% TEA in water	2023		Overall Factor[3] (1 study)					Use	0.74
Gradko	20% TEA in water	2023		Overall Factor[3] (23 studies)					Use	0.81

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1
Periods used to calculate bias	2
Bias Factor A	0.44 (0.33 - 0.69)
Bias Factor B	126% (46% - 205%)
Diffusion Tube Mean (μg/m³)	15.8
Mean CV (Precision)	1.7%
Automatic Mean (μg/m³)	7.0
Data Capture	84%
Adjusted Tube Mean (μg/m³)	7 (5 - 11)

Notes:

The local bias adjustment factor was not used to adjust the 2023 diffusion tube results, as the factor was only derived from 2 periods.

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.

No non-automatic NO$_2$ monitoring locations within Hastings Borough Council required distance correction during 2023.

QA/QC of Automatic Monitoring

The automatic monitoring site at Bulverhythe (HT1) is part of the Sussex Air Quality Network. The Local Site Operations (LSO) duties are carried out by trained officers from the Council. Servicing of the instrumentation, gases and associated on-site equipment and station is undertaken by Enviro Technology Services Ltd. Bureau Veritas UK carry out ratification-type process and the data presented in this report has been verified. The verification process is less thorough than the ratification process applied to the AURN network.

Air Quality data is live and uploaded to the Sussex-Air website (www.sussex-air.net).

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

The TEOM PM_{10} monitor utilised by Hastings Borough Council requires correction by a Volatile Correction Model (VCM). Results are presented on the Sussex Air website only as the reference gravimetric equivalent.

Automatic Monitoring Annualisation

Automatic monitoring of $PM_{2.5}$ at HT1 recorded data capture of less than 75% and therefore it was required to annualise monitoring data. Table C.1 presents the annualisation process for $PM_{2.5}$ at HT1. Data capture for PM2.5 at Brighton Preston Park was less than 85% and as such, it was not suitable for use in the annualisation calculation.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO_2 concentrations corrected for distance are presented in Table A.3.

No automatic monitoring locations within Hastings Borough Council required distance correction during 2023.

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

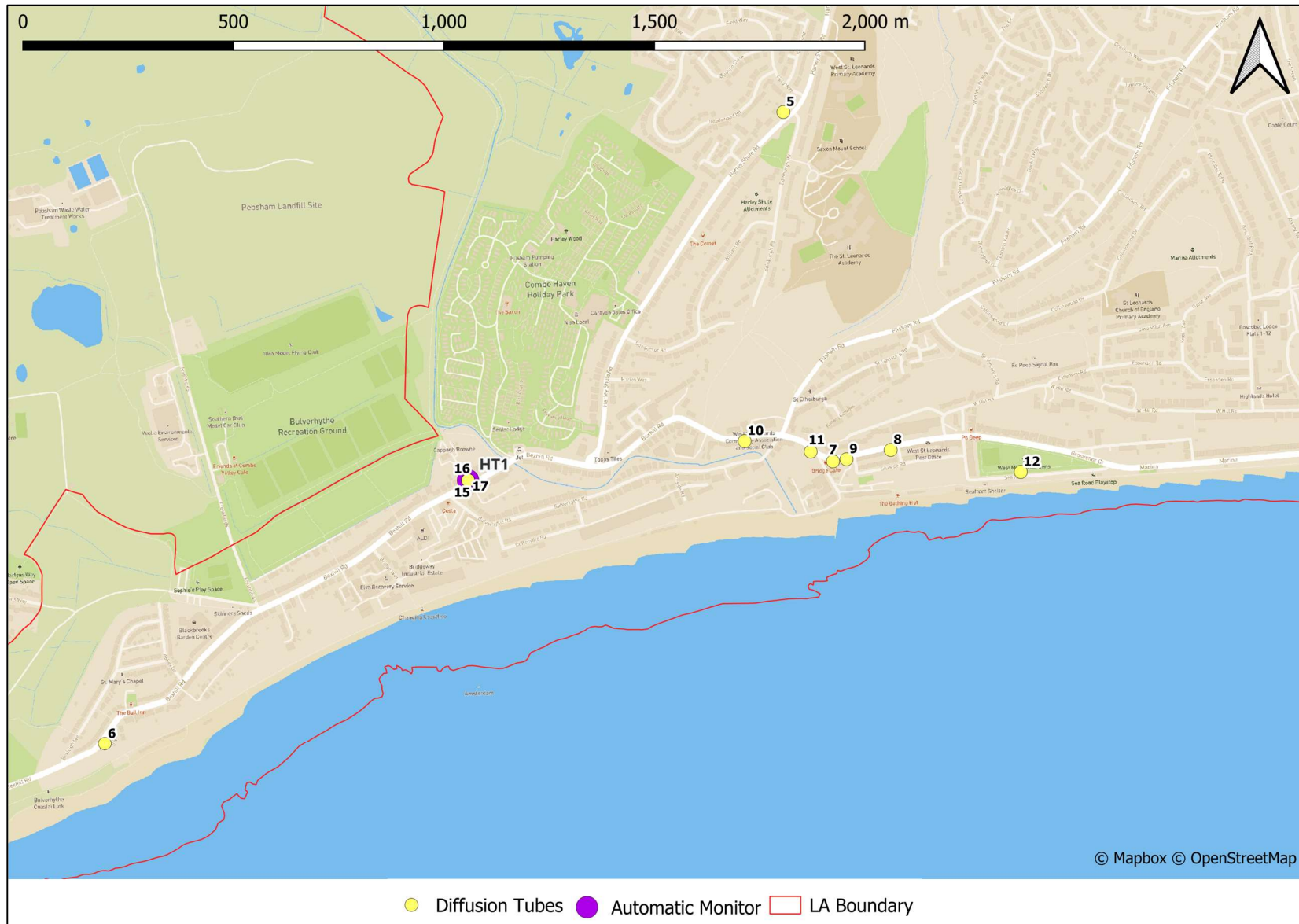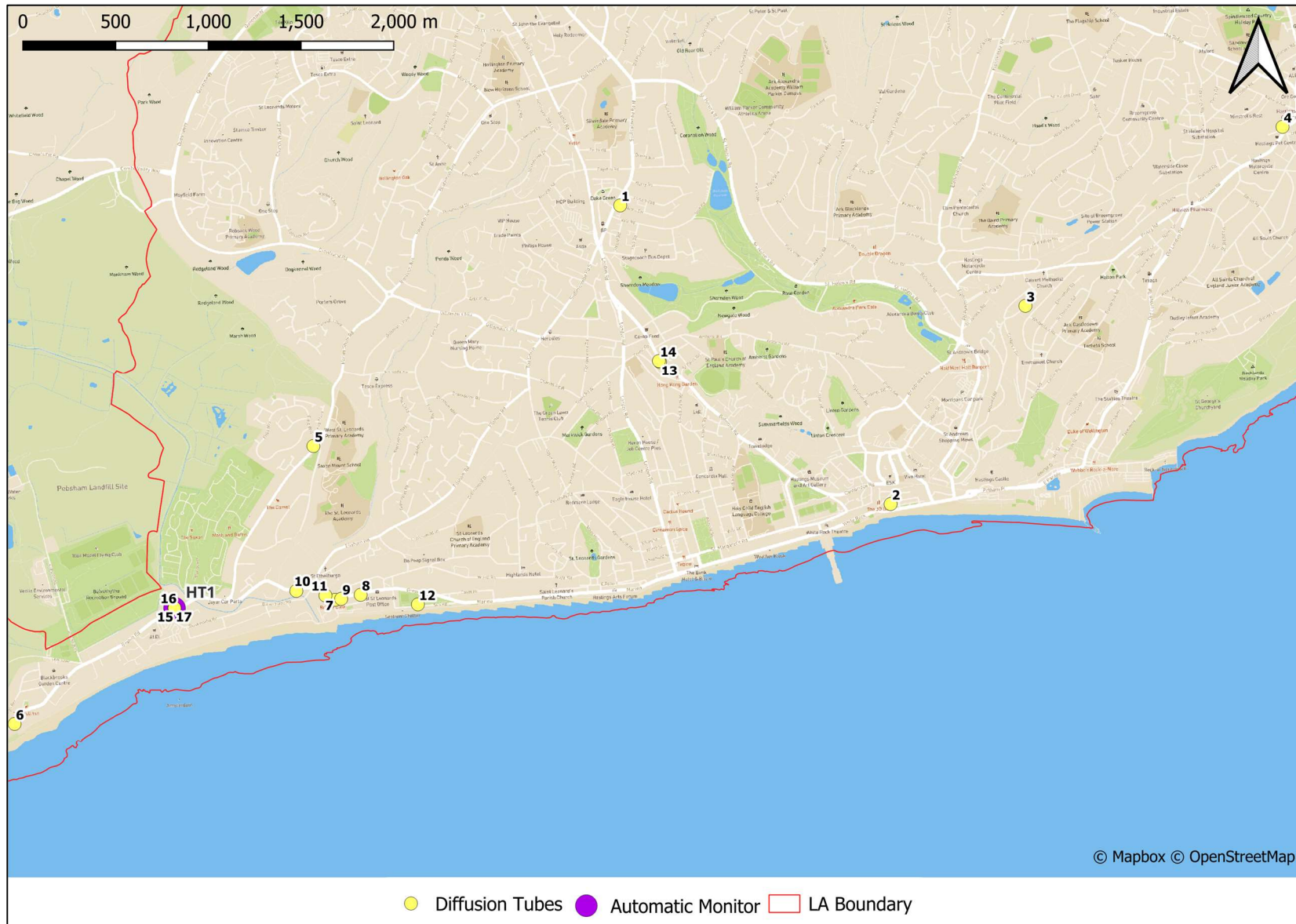**Figure D.1 – Map of Monitoring Sites (Bluverhythe)**

Figure D.2 – Map of Monitoring Sites (Hastings Borough)

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

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

Appendix F: Openair Plots for HT1

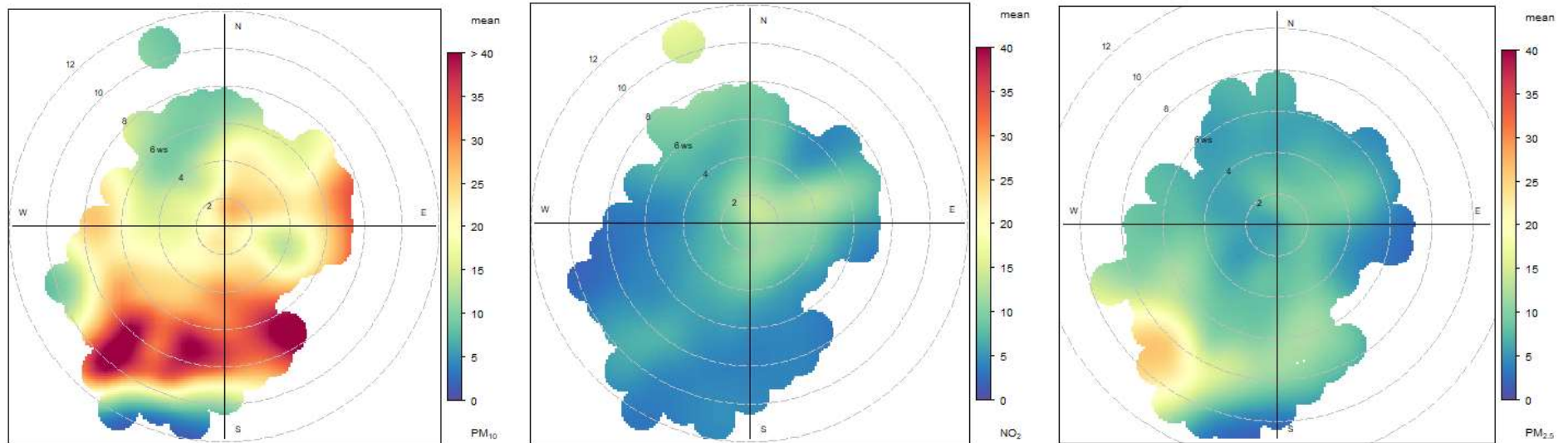**Figure F. 1: Polar Plots for PM$_{10}$ (left), NO$_2$ (centre) and PM$_{2.5}$ (right)**

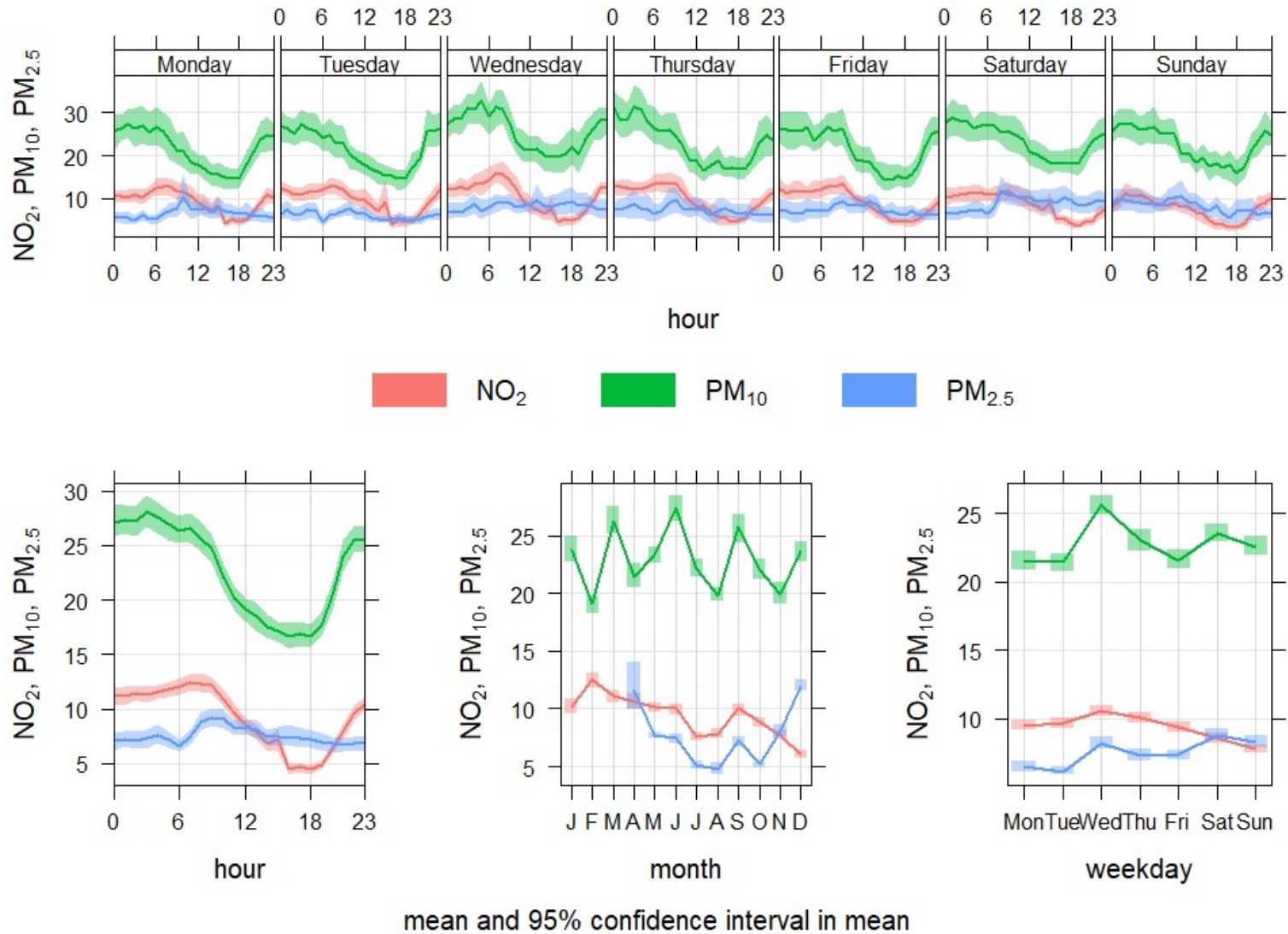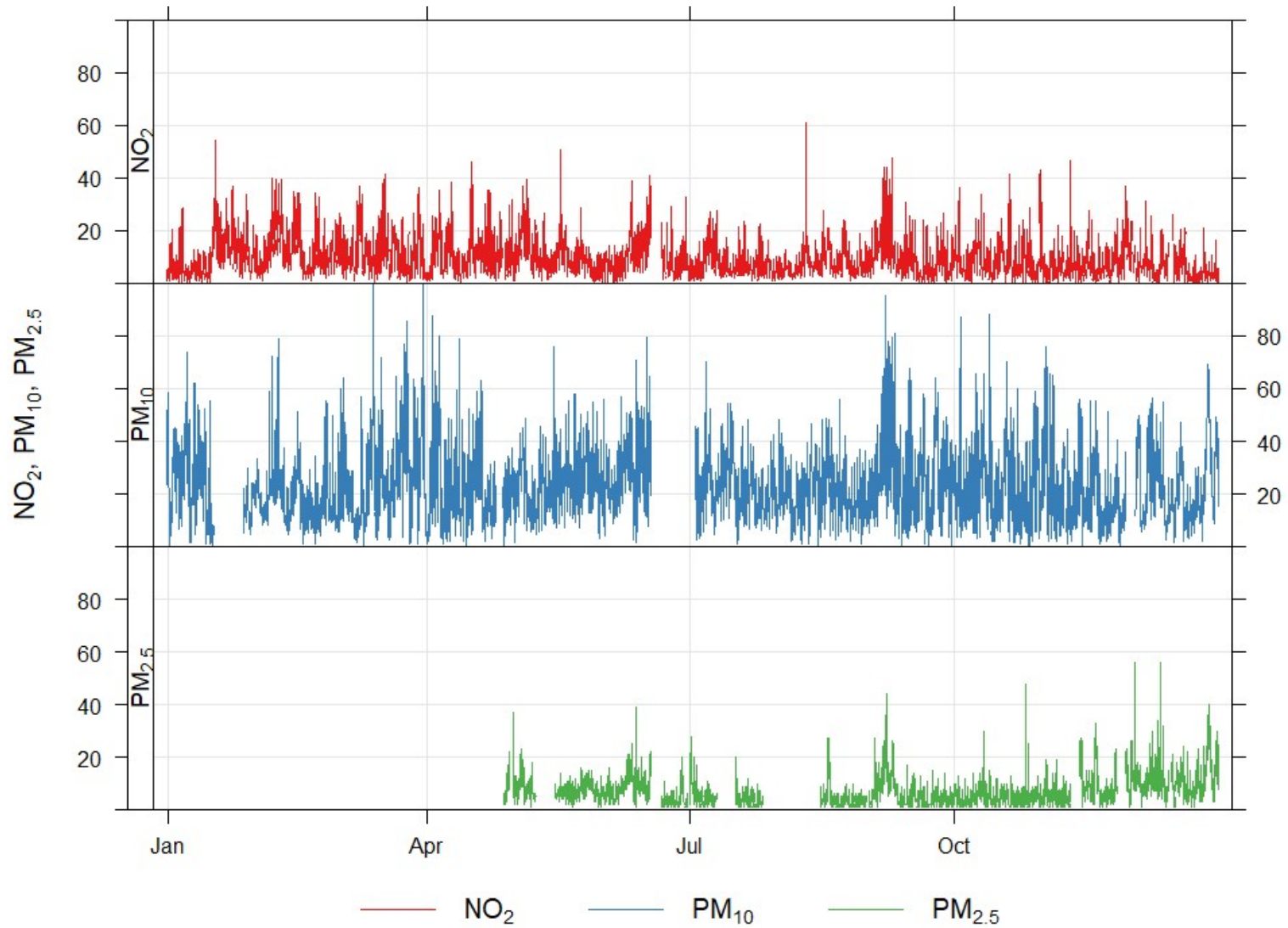**Figure F. 2: Time Variation Plots for NO₂, PM₁₀ and PM₂.₅ at HT1.**

mean and 95% confidence interval in mean

Figure F. 3: Line Plots for NO₂, PM₁₀ and PM₂.₅, at HT1

Glossary of Terms

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

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
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- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.