

Tendring
District Council



2023 Air Quality Annual Status Report (ASR)

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

Date: June 2023

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Date	June 2023

Executive Summary: Air Quality in Our Area

Air Quality in Tendring

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

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

Within the Tendring District air quality is generally good. Road traffic emissions and port activities are the most significant source of air pollution within Tendring. The main pollutant of concern is Nitrogen Dioxide (NO₂).

Overall the monitoring data found no exceedances of the Air Quality Objectives in 2022.

The majority of monitoring locations this year saw a slight increase in concentrations of NO₂ in comparison to last year results, with the exception of a few locations.

High concentrations of NO₂ were recorded at monitoring location DT45, located at the junction of North Road, Old Road and St Johns Road, Great Clacton. The annual mean concentration was 40µg/m³ however the bias adjustment brought the figure below the Air Quality Objectives. DT45 is located at the busy junction and mini roundabout, it is heavily congested by road traffic throughout the day and during rush hours.

Occasional high monthly concentrations of NO₂ exceeding 40µg/m³ were recorded at a number of monitoring stations throughout Clacton, including the town centre, sea front,

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

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

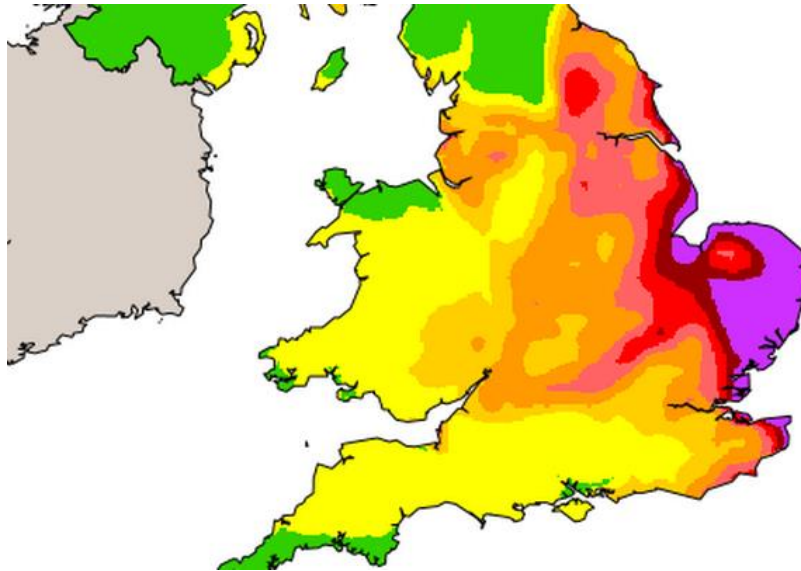
³ Defra. Air quality appraisal: damage cost guidance, January 2023

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

Wellesley Road, Old Road, St Osyth Road, Valley Road, London Road and Clacton bypass. As well as monitoring stations at High Street Thorpe, Frinton Road Kirby, Colchester Road Elmstead and Clacton Road St Osyth.

High concentrations of NO₂ were predominantly found during January 2022 and March 2022.

In March 2022, the Department for Environment, Food and Rural Affairs (DEFRA) issued an alert for high pollution levels in the East and South East, which included the Tendring district. Clacton on Sea and Manningtree were given the highest pollution rating of 10. The advice provided for areas with very high pollution levels was to reduce physical exertion, especially outdoors and to avoid main roads. Adults and children with lung problems, adults with heart problems and older people were advised to avoid strenuous physical activity. People with asthma may have found they needed to use their inhalers more often.



(image: DEFRA)

Tendring's air quality data for March 2022 recorded high concentrations of NO₂ at monitoring stations across Clacton on Sea. The main busy road leading into the district, the Clacton Bypass road A133 recorded 50.8µg/m³ and the monitoring station located along Clacton's seafront nearby Clacton hospital recorded 46.4µg/m³.

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 Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM_{2.5} in their areas. The Road to Zero⁶ details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Tendring District Council's core actions to target sources of pollution within the district include:

- Continue to improve the monitoring network across the district
- Continue to promote and raise awareness of local air quality
- Tendring District Council's Environmental Protection team provide advice to the Planning Team regarding proposed development in an attempt to minimise air pollution impacts and maintain the good levels of air quality in Tendring

⁵ Defra. Environmental Improvement Plan 2023, January 2023

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Conclusions and Priorities

In conclusion there have been no exceedances in the Air Quality Objectives for concentrations of NO₂ within Tendring during 2022.

There have been no significant pollution sources identified from proposed residential or industrial developments within Tendring in 2022.

NO₂ concentrations continue to rise across the majority of monitoring locations within Tendring with the exclusion of a few locations.

There is potential exceedances in the Air Quality Objectives at North Road junction, Great Clacton and potential for an Air Quality Management Area (AQMA) to be declared within the near future should levels of NO₂ remain high. Tendring District Council have increased the monitoring network in this area and continuing to monitor the situation.

Tendring District Council will prioritise interventions to ensure air quality is maintained at levels below the Air Quality Objectives.

Tendring District Council will produce and implement a local Air Quality Strategy to prevent and reduce polluting activities.

Local Engagement and How to get Involved

Tendring District Council is a member of the Essex Air Quality consortium. The Essex Air web site provides a daily forecast of air pollution which is based off UK-AIR data feeds and @EssexAir twitter feed provides localised weekly air pollution forecasts.

Tendring District Council ran its first social media campaign for Clean Air Day 2022, raising awareness of local air pollution and informing residents of positive steps they can take such as adopting electric vehicles, avoiding millions of car journeys, slashing industrial and construction emissions and stopping buying products that cause pollution in our homes.

Tendring District Council will continue to support the Clean Air Day campaign.





A free earth festival attracted over 2,000 people to Manningtree, Essex in June 2022. The Manningtree Earth Festival, organised by volunteers, consisted of over 40 stalls featuring local businesses, charities and community groups promoting climate change, sustainable and biodiversity.

There were a number of sponsors for the event including; Manningtree District Business Chamber, Essex County Council, Tendring District Council, Lawford Parish Council and Manningtree Town Council.

Members of the public and actions groups are increasingly recognising the impacts of poor air quality. The public can help improve air quality within Tendring by:

- Reduce your number of car journeys, try walking or cycling instead
- Combine your trips. If going further away consider public transport such as bus or train
- If possible, switching to an electric vehicle
- Give car-sharing a go
- Consider switching energy suppliers to companies who use renewable energy sources
- Avoid burning at home, open fires and wood-burning stoves have a significant impact on air pollution
- Plant more trees, plants can help clean the air around them by consuming CO₂

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Team of Tendring District Council with the support and agreement of the following officers and departments:

- Rebecca Duff-Cole - Technical Officer, Environmental Protection Team
- Katie Wesley-Smith – Environmental Protection Manager, Environmental Protection Team
- Tim R Clarke – Assistant Director of Housing & Environment

This ASR has not been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to the Environmental Protection team at:

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Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in Tendring	i
Actions to Improve Air Quality	iii
Conclusions and Priorities	iv
Local Engagement and How to get Involved	v
Local Responsibilities and Commitment	vii
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
2.1 Air Quality Management Areas	2
2.2 Progress and Impact of Measures to address Air Quality in Tendring	3
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations	7
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	9
3.1 Summary of Monitoring Undertaken	9
3.1.1 Automatic Monitoring Sites	9
3.1.2 Non-Automatic Monitoring Sites	9
3.2 Individual Pollutants	11
3.2.1 Nitrogen Dioxide (NO ₂)	11
Appendix A: Monitoring Results	13
Appendix B: Full Monthly Diffusion Tube Results for 2022	30
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	32
New or Changed Sources Identified Within Tendring During 2022	32
Additional Air Quality Works Undertaken by Tendring District Council During 2022	34
QA/QC of Diffusion Tube Monitoring	34
Diffusion Tube Annualisation	34
Diffusion Tube Bias Adjustment Factors	34
NO ₂ Fall-off with Distance from the Road	35
QA/QC of Automatic Monitoring	35
Automatic Monitoring Annualisation	35
NO ₂ Fall-off with Distance from the Road	36
Appendix D: Map(s) of Monitoring Locations and AQMAs	37
Appendix E: Summary of Air Quality Objectives in England	45
Glossary of Terms	46
References	47

Figures

Figure A.1 – Figure A.1 – Clacton on Sea Trends in Annual Mean NO ₂ Concentrations (Non-Automatic Monitoring)	Error! Bookmark not defined.
Figure A.2 – Thorpe le Soken, Kirby le Soken, Frinton on Sea and Walton on the Naze Trends in Annual Mean NO ₂ Concentrations (Non-Automatic Monitoring)	201
Figure A.3 – Harwich Trends in Annual Mean NO ₂ Concentrations (Non-Automatic Monitoring)	Error! Bookmark not defined. 2
Figure A.4 – Manningtree, Ardleigh, Frating, Elmstead and St Osyth Trends in Annual Mean NO ₂ Concentrations (Non-Automatic Monitoring)....	Error! Bookmark not defined. 3
Figure A.5 – Trends in Annual Mean PM ₁₀ Concentrations	Error! Bookmark not defined. 6
Figure A.6 – Trends in Annual Mean PM _{2.5} Concentrations	Error! Bookmark not defined. 8
Figure D.1 – Map of Automatic and Non-Automatic Monitoring Sites	37

Tables

Table 2.2 – Progress on Measures to Improve Air Quality.....	5
Table A.1 – Details of Automatic Monitoring Sites	13
Table A.2 – Details of Non-Automatic Monitoring Sites	14
Table A.3 – Annual Mean NO ₂ Monitoring Results: Automatic Monitoring (µg/m ³)	17
Table A.4 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)	18
Table A.5 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	24
Table A.6 – Annual Mean PM ₁₀ Monitoring Results (µg/m ³)	25
Table A.7 – 24-Hour Mean PM ₁₀ Monitoring Results, Number of PM ₁₀ 24-Hour Means > 50µg/m ³	27
Table A.8 – Annual Mean PM _{2.5} Monitoring Results (µg/m ³).....	29
Table B.1 – NO ₂ 2022 Diffusion Tube Results (µg/m ³)	30
Table C.2 – Bias Adjustment Factor	35
Table E.1 – Air Quality Objectives in England	45

1 Local Air Quality Management

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

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

Tendring currently does not have any declared AQMAs.

A local Air Quality Strategy is under development to prevent and reduce polluting activities. The Local Air Quality Strategy will be available at: [Tendring District Council | Air Quality \(tendringdc.gov.uk\)](https://www.tendringdc.gov.uk/air-quality)

2.2 Progress and Impact of Measures to address Air Quality in Tendring

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

The Annual Status Report sets out new information on air quality obtained by Tendring District Council (TDC) as part of the Review & Assessment process required under the Environment Act 1995 (as amended by the Environment Act 2021) and subsequent Regulations.

TDC enjoys generally good air quality and as a result do not have any designated air quality management areas (AQMA) within their jurisdiction.

Automatic monitoring of NO₂ was undertaken at one site during 2021, in St Osyth. This station, CM1, additionally monitors for O₃. An annual mean NO₂ concentration of 8µg/m³ was obtained for 2021, significantly below the AQO.

Non-automatic monitoring of NO₂ was additionally undertaken at 33 sites, with no recorded exceedances of the annual mean objective for NO₂. A maximum NO₂ concentration of 28.2µg/m³ was recorded by DT22, a roadside site in Clacton. Data capture across the monitoring network was good, with no requirement for annualisation. No sites recorded concentrations >60µg/m³ and therefore exceedance of the 1-hour mean objective is considered unlikely. Moreover, due to concentrations at all sites being less than 36µg/m³, there is no requirement for distance correction where sites are not positioned at locations of relevant exposure.

It is noted that 2021 was the first full year of data for 14 of the Council's 33 non-automatic monitoring sites; it is encouraging to see the Council expanding their monitoring network.

QA/QC is considered to be robust, with supporting discussion provided for all procedures applied. The national bias adjustment factor has been applied to the Council's 2021 monitoring data, which is appropriate and consistent with the approach adopted in previous years. The Council are however reminded to use the most recently published version of the national bias adjustment factor spreadsheet to derive the bias adjustment factor; based on the submission date of the ASR, the spreadsheet version should have been 09/22. In this instance, as the factor applied is slightly higher than the most recent factor, the Council are not required to re-submit their results.

The Council are commended on the inclusion of actions to improve air quality in the absence of any AQMAs. It is encouraging to see the Council demonstrate their commitment to local air quality management.

From 2023 those authorities who have not had to designate AQMAs and produce AQAPs will be required to draw up a local Air Quality Strategy. These strategies will not have a set format and authorities will be able to draw on content within their ASRs and local transport plans to produce them. The local Air Quality Strategy requirement aims to encourage local authority prevention and reduction of polluting activities in preference to only taking steps to reduce air pollution once exceedances have been identified.

On the basis of the evidence provided by the local authority the conclusions reached are accepted for all sources and pollutants. The next step is for Tendring District Council to submit an Annual Status Report in 2022.

Tendring District Council notes all the comments from Defra's appraisal of last year's ASR. Tendring District Council will ensure the appropriate bias adjustment factor is used and will draw up a local Air Quality Strategy.

Tendring District Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. 13 measures are included within Table 2.1, with the type of measure and the progress Tendring District Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	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	Identify traffic 'bottlenecks'	Traffic Management	Other	2018	Ongoing	Local Authority Environmental Health	-	NO	-	-	Implementation	Not quantifiable	Number of monitoring locations	6 new monitoring locations added in 2022	
2	Company Vehicle Procurement	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2018	Ongoing	Local Authority Environmental Health	TDC	NO	-	£1 million - £10 million	Implementation	Preventable emissions	Number of EV	Implementation on-going	TDC have one electric van in the fleet
3	Responding to planning consultations consider air quality impacts	Policy Guidance and Development Control	Air Quality and Planning Guidance	2018	Ongoing	Local Authority Environmental Health	-	NO	-	-	Implementation	Preventable emissions	Respond to planning consultations within timescale	The Environmental Protection team responded to 498 planning consultation in 2022	
4	Encourage good practice regarding control of PM	Environmental Permits	Other	Ongoing	Ongoing	Local Authority Environmental Health	-	NO	-	-	Implementation	Not quantifiable	Number of complaints	1 complaint – complaint not justified and no issue substantiated	Continuing to ensure operators compliance with Environmental Permits
5	The Essex Pollution Group shares knowledge and best practices	Policy Guidance and Development Control	Regional group co-ordinating	Ongoing	Ongoing	Local Authority Environmental Health and other Essex local authorities	-	NO	-	-	Implementation	Not quantifiable	-	Implementation on-going	
6	Home working policy	Policy Guidance and Development Control	Reduction in vehicle use	2018	2019	Local Authority Environmental Health	-	NO	-	-	Completed	Reduced vehicle use	Number of officers working from home	TDC Remote Working Policy implemented in Jan 2019	Home working numbers at TDC remain high
7	Update Council's Air Quality page	Promoting Air Quality and awareness	Other	2018	2020	Local Authority Environmental Health	-	NO	-	-	Completed	Not quantifiable	-	Continue to update the Council's Air quality website page with new information	
8	Member of Essex Air	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop area wide Strategies to reduce emissions and improve air quality	Ongoing	Ongoing	Local Authority Environmental Health and other Essex local authorities	TDC	NO	-	-	Completed	Not quantifiable	-	Implementation on-going	New Essex Air website being developed for 2023

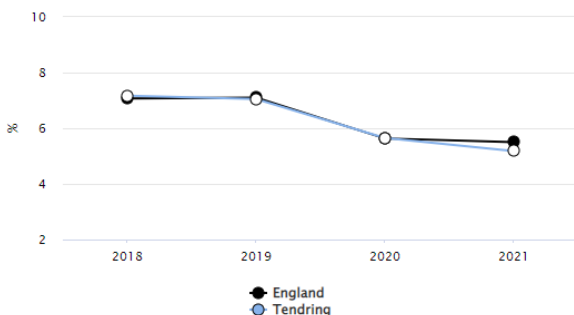
Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
9	Climate Change Emergency Declaration	Policy Guidance and Development Control	Air Quality and Planning Guidance	2019	2030	Local Authority Environmental Health	TDC	NO	-	£1 million - £10 million	Implementation	Preventable emissions	Reduction in carbon emissions	Implementation on-going	TDC carbon emissions increased in 2022 in comparison to previous year
10	Installation of EV charging points	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles and EV charging	2019	Ongoing	Local Authority Environmental Health	TDC	NO	-	< £10k	Planning	Preventable emissions	Number of charging points	Implementation on-going	New EV charging point to be installed at Clacton Town Hall and new Dovercourt carpark
11	Electric Vehicle Charge Point Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2022	2023	TDC	-	NO	-	-	Planning	Not quantifiable	Strategy produced	Implementation on-going	
12	Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2022	2023	Local Authority Environmental Health	-	NO	-	-	Planning	Not quantifiable	Strategy produced	Implementation on-going	Due to be completed in 2023
13	Clean Air Day campaign	Public Information	Via the Internet	2022	2022	Local Authority Environmental Health	-	NO	-	-	Completed	Reduced emissions due to improved awareness	Behaviour change	Social media campaign	

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

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

Tendring District Council have not identified any areas of PM_{2.5} hotspots in 2022 and therefore do not currently monitor PM_{2.5}.

Tendring District Council notes the Public Health Outcomes Framework. The Public Health Indicators for PM_{2.5} provides a useful indication as to the burden associated with concentrations of PM_{2.5} within the local authority area. The latest available data (2021) shows the fraction of mortality attributable to particulate air pollution in Tendring is 5.2%.



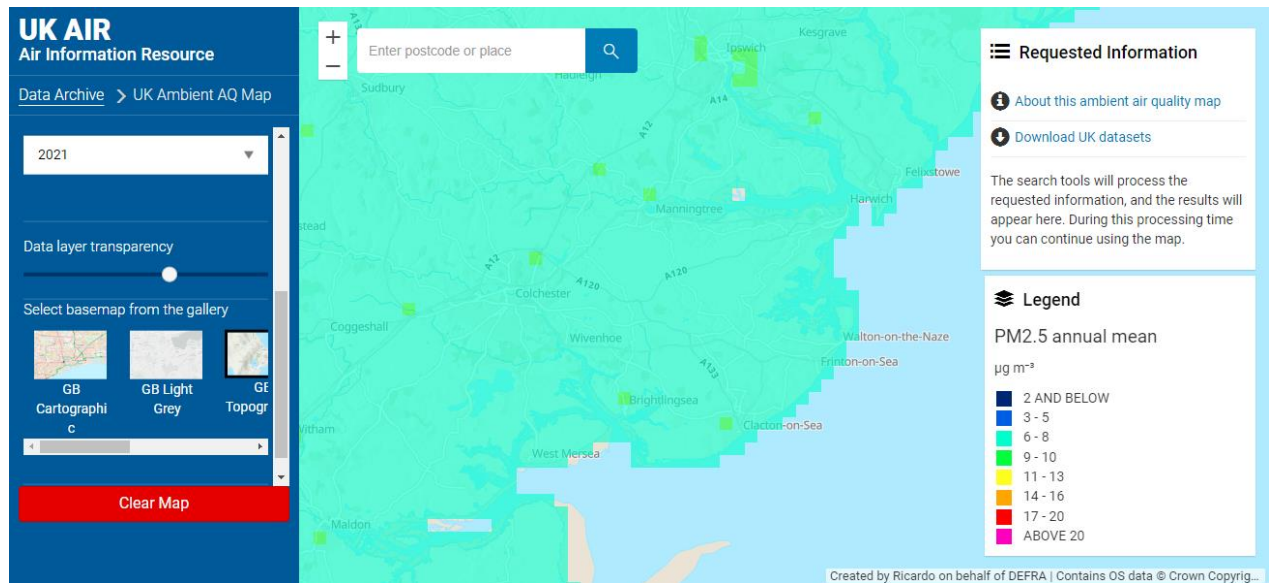
Recent trend: Could not be calculated

Period	Count	Value	Tendring		England
			95% Lower CI	95% Upper CI	
2018	0	7.2%	-	-	7.1%
2019	0	7.1%	-	-	7.1%
2020	0	5.6%	-	-	5.6%
2021	0	5.2%	-	-	5.5%

Source: Background annual average PM_{2.5} concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra's Automatic Urban and Rural Network (<https://uk-air.defra.gov.uk/interactive-map>). By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM_{2.5} concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC). Concentrations of total PM_{2.5} are used for estimating the mortality burden attributable to particulate air pollution (COMEAP, 2022).

Tendring District Council is taking the following measures to address PM_{2.5}:

- In the absence of PM_{2.5} monitoring Tendring District Council use the Defra Background mapping resource to review the maximum background annual mean PM_{2.5} concentrations within Tendring



- Tendring District Council's Environmental Protection team ensure where necessary PM_{2.5} air quality assessments are submitted in support of planning applications
- The Environmental Protection team undertake regular inspections of permitted industry where combustion and non-combustion processes could lead to anthropogenic emissions of PM_{2.5}
- The Essex Air twitter account is encouraging the reporting of excessively smoky vehicle exhaust emissions through the DVSA reporting service. It is possible to report either heavy goods vehicles or public service vehicles (buses)

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Automatic (continuous) monitoring was undertaken at one site during 2022. 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 automatic monitoring station located in St Osyth forms part of the Automatic Rural Monitoring Network which is operated by Bureau Veritas. The automatic monitoring results are available through the UK-Air website: [Local Authority Details - Defra, UK](#)

In 2022 the rural monitoring station at St Osyth started measuring PM₁₀ particulate matter (Hourly measured) and PM_{2.5} particulate matter (Hourly measured) from 1st April. The results have been illustrated in Figure A.3.

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

Tendring District Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 41 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including

bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

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

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

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

There have been no exceedances of the Air Quality Objectives for NO₂ within Tendring.

NO₂ concentrations continue to rise across the majority of monitoring locations within Tendring with the exception of a few locations decreasing only slightly or remaining steady. This is depicted in Figure A.2.

High concentrations of NO₂ were recorded at monitoring location DT45, located at the junction of North Road, Old Road and St Johns Road, Great Clacton. In March 2022 the site recorded 61.4µg/m³. The annual mean concentration was 40µg/m³ however the bias adjustment brought the figure below the Air Quality Objectives.

DT45 is located at a busy junction and mini roundabout, it is heavily congested by road traffic throughout the day and during rush hour. Tendring District Council has increased the number of monitoring stations within this area and is continuing to monitor this area of concern.

There is potential exceedances in the Air Quality Objectives for NO₂ at DT45 North Road junction, Great Clacton and potential for an Air Quality Management Area (AQMA) to be declared within the near future should levels of NO₂ remain high.

Occasional high monthly concentrations of NO₂ exceeding 40 µg/m³ were recorded at a number of monitoring stations throughout Clacton on Sea including the town centre, sea front, Wellesley Road, Old Road, St Osyth Road, Valley Road, London Road and Clacton bypass. As well as monitoring stations at High Street Thorpe, Frinton Road Kirby, Colchester Road Elmstead and Clacton Road St Osyth.

All monitoring data presented has been properly ratified and corrected for bias where applicable.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
CM1	St Osyth	Rural Background	610430	213198	Ozone Nitric oxide Nitrogen dioxide Nitrogen oxides as nitrogen dioxide PM10 particulate matter (Hourly measured) PM2.5 particulate matter (Hourly measured)	No	Chemiluminescent	896	98	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.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)
DT29	Clacton Town Centre - Pier Avenue	Roadside	617397	214882	NO ₂	No	0	4	No	2.5
DT55	Clacton Town Centre - Station Road	Roadside	617569	214716	NO ₂	No	0	2.2	No	2.5
DT30	Clacton Hospital / Sea Front	Roadside	617232	214219	NO ₂	No	7	2.8	No	2.5
DT11	Clacton Town Hall 1	Urban Background	617272	215021	NO ₂	No	29	9	No	2.5
DT12	Clacton Town Hall 2	Urban Background	617272	215021	NO ₂	No	29	9	No	2.5
DT13	Clacton Town Hall 3	Urban Background	617272	215021	NO ₂	No	29	9	No	2.5
DT22	Wellesley Road, Clacton	Roadside	617451	215385	NO ₂	No	4.7	2.3	No	2.5
DT41	Wellesley Road 2, Clacton	Roadside	617505	215662	NO ₂	No	4.4	2	No	2.5
DT42	Old Road/ St Annes Road, Clacton	Roadside	617336	215793	NO ₂	No	6	1.6	No	2.5
DT56	Old Road/ Herbert Road, Clacton	Roadside	617189	215265	NO ₂	No	2.9	1.2	No	2.5
DT57	St Osyth Road, Clacton (outside 97)	Roadside	616771	215248	NO ₂	No	3.1	1.6	No	2.5
DT43	Holland Road, Holland	Roadside	619671	216499	NO ₂	No	6	1	No	2.5
DT31	Valley Road 1, Clacton	Roadside	617888	216298	NO ₂	No	5.3	3.4	No	2.5
DT44	Valley Road 2, Clacton	Roadside	618007	216281	NO ₂	No	10	2.3	No	2.5
DT45	St John Road / North Road junction 1	Roadside	617618	216487	NO ₂	No	3	1.2	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)
DT58	The Ship Old Road / North Road junction 2	Roadside	617654	216434	NO ₂	No	3.2	1	No	2.5
DT32	London Road, Clacton	Roadside	617143	216143	NO ₂	No	8	1	No	2.5
DT14	A133 Clacton Bypass	Roadside	616163	218287	NO ₂	No	11	2.8	No	3.0
DT33	High Street, Thorpe Le Soken	Roadside	617887	222370	NO ₂	No	0	2.3	No	2.5
DT46	Landermere Road, Thorpe Le Soken	Roadside	618042	222315	NO ₂	No	1.5	1.5	No	2.5
DT47	Frinton Road, Kirby Le Soken	Roadside	621992	220859	NO ₂	No	4.5	2.2	No	2.5
DT34	Connaught Avenue, Frinton	Roadside	623643	220058	NO ₂	No	0	3.4	No	2.5
DT23	Walton Road, Walton on the Naze	Roadside	625163	221687	NO ₂	No	20	1.5	No	2.5
DT9	Harwich Hospital, Main Road, Harwich	Roadside	624294	231258	NO ₂	No	14	4	No	2.5
DT21	High Street, Harwich 1 (Kingsway)	Roadside	625600	231601	NO ₂	No	0	2.2	No	2.5
DT59	High Street, Harwich 2 (Mill Lane)	Roadside	625464	231556	NO ₂	No	0	2.5	No	2.5
DT48	The Quay Harwich	Industrial	625977	232866	NO ₂	No	25	2.3	No	2.5
DT49	Harwich International	Industrial	623978	231633	NO ₂	No	365	N/A	No	2.5
DT20	A120 Hempstall Farm	Roadside	612619	227395	NO ₂	No	243	1	No	2.5
DT35	High Street, Manningtree	Roadside	610596	231858	NO ₂	No	0	2	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)
DT36	Cox's Hill, Manningtree	Roadside	609595	232190	NO ₂	No	5.3	2.6	No	2.5
DT37	Long Road, Manningtree	Roadside	609537	231036	NO ₂	No	4	2.5	No	2.5
DT50	Harwich Road, Ardleigh	Roadside	605355	229466	NO ₂	No	3	1.8	No	2.5
DT60	The Old Post Office, Main Road, Frating	Roadside	609093	223293	NO ₂	No	5.2	4	No	2.5
DT38	A133 Colchester Road, Elmstead Market	Roadside	606168	224553	NO ₂	No	3.5	3	No	2.5
DT51	Main Road, Alresford	Roadside	606666	221895	NO ₂	No	3.7	2	No	2.5
DT39	Church Road, Brightlingsea	Roadside	608285	217741	NO ₂	No	10	1.8	No	2.5
DT52	Brightlingsea Quay	Industrial	608499	216315	NO ₂	No	2	2	No	2.5
DT53	Spring Road, St Osyth	Roadside	612322	215566	NO ₂	No	3	2.3	No	2.5
DT40	Clacton Road 1, St Osyth	Roadside	612328	215659	NO ₂	No	0.5	1.3	No	2.5
DT54	Clacton Road 2, St Osyth	Roadside	612413	215696	NO ₂	No	2	2	No	2.5

Notes:

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

(2) N/A if not applicable.

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	610430	213198	Rural Background	86%	86%	13	13	8	8	9

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

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

Notes:

The annual mean concentrations are presented as µg/m³.

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

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

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

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

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

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
DT29	617397	214882	Roadside	100	100	-	-	16.4	19.3	19.1
DT55	617569	214716	Roadside	100	100	-	-	-	-	20.9
DT30	617232	214219	Roadside	83.3	83.3	-	-	16.8	17.6	20
DT11	617272	215021	Urban Background	83.3	83.3	13.7	14	11	12.2	13.1
DT12	617272	215021	Urban Background	100	100	14.3	13.7	-	-	13.2
DT13	617272	215021	Urban Background	100	100	14.5	13.8	-	-	13.4
DT22	617451	215385	Roadside	100	100	20.1	19	25.6	28.2	27.9
DT41	617505	215662	Roadside	100	100	-	-	-	23.2	22.2
DT42	617336	215793	Roadside	91.6	91.6	-	-	-	31.5	27.6
DT56	617189	215265	Roadside	100	100	-	-	-	-	20.7
DT57	616771	215248	Roadside	100	100	-	-	-	-	21.9
DT43	619671	216499	Roadside	100	100	-	-	-	17.4	16.2
DT31	617888	216298	Roadside	100	100	-	-	24	26.6	25.7
DT44	618007	216281	Roadside	91.6	91.6	-	-	-	24.3	25.6
DT45	617618	216487	Roadside	100	100	-	-	-	31.5	30.4
DT58	617654	216434	Roadside	100	100	-	-	-	-	24.3
DT32	617143	216143	Roadside	91.6	91.6	-	-	16	23.4	22.9
DT14	616163	218287	Roadside	91.6	91.6	-	-	17.4	23.4	23.8
DT33	617887	222370	Roadside	91.6	91.6	-	-	17.3	19.8	18.9
DT46	618042	222315	Roadside	100	100	-	-	-	18.3	19.5
DT47	621992	220859	Roadside	91.6	91.6	-	-	-	23.4	24.1
DT34	623643	220058	Roadside	100	100	-	-	15.2	14.7	15.3
DT23	625163	221687	Roadside	100	100	20.1	19	15	16.9	19
DT9	624294	231258	Roadside	91.6	91.6	17.4	17.5	15.6	16.9	16.2
DT21	625600	231601	Roadside	100	100	20.3	20	18.4	18.8	19.1
DT59	625464	231556	Roadside	100	100	-	-	-	-	19.7
DT48	625977	232866	Roadside	91.6	91.6	-	-	-	19.7	18.3
DT49	623978	231633	Industrial	100	100	-	-	-	22.5	21.5
DT20	612619	227395	Roadside	91.6	91.6	20.3	20.7	15.8	15.5	15.9
DT35	610596	231858	Roadside	100	100	-	-	18.2	19	19.1
DT36	609595	232190	Roadside	100	100	-	-	15.4	16.7	17.8
DT37	609537	231036	Roadside	100	100	-	-	17.9	17.4	17.8

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 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
DT50	605355	229466	Roadside	100	100	-	-	-	15.9	16
DT60	609093	223293	Roadside	100	100	-	-	-	-	17.5
DT38	606168	224553	Roadside	100	100	-	-	17.4	18.6	19.2
DT51	606666	221895	Roadside	100	100	-	-	-	14.2	13.9
DT39	608285	217741	Industrial	100	100	-	-	15	16	16.8
DT52	608499	216315	Roadside	100	100	-	-	-	14	13.7
DT53	612322	215566	Roadside	91.6	91.6	-	-	-	14.2	13.7
DT40	612328	215659	Roadside	100	100	-	-	22.6	23.5	23.4
DT54	612413	215696	Roadside	100	100	-	-	-	14.7	15

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

Diffusion tube data has been bias adjusted.

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

Notes:

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

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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

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

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

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

Figure A.1 – Clacton on Sea Trends in Annual Mean NO₂ Concentrations (Non-Automatic Monitoring)

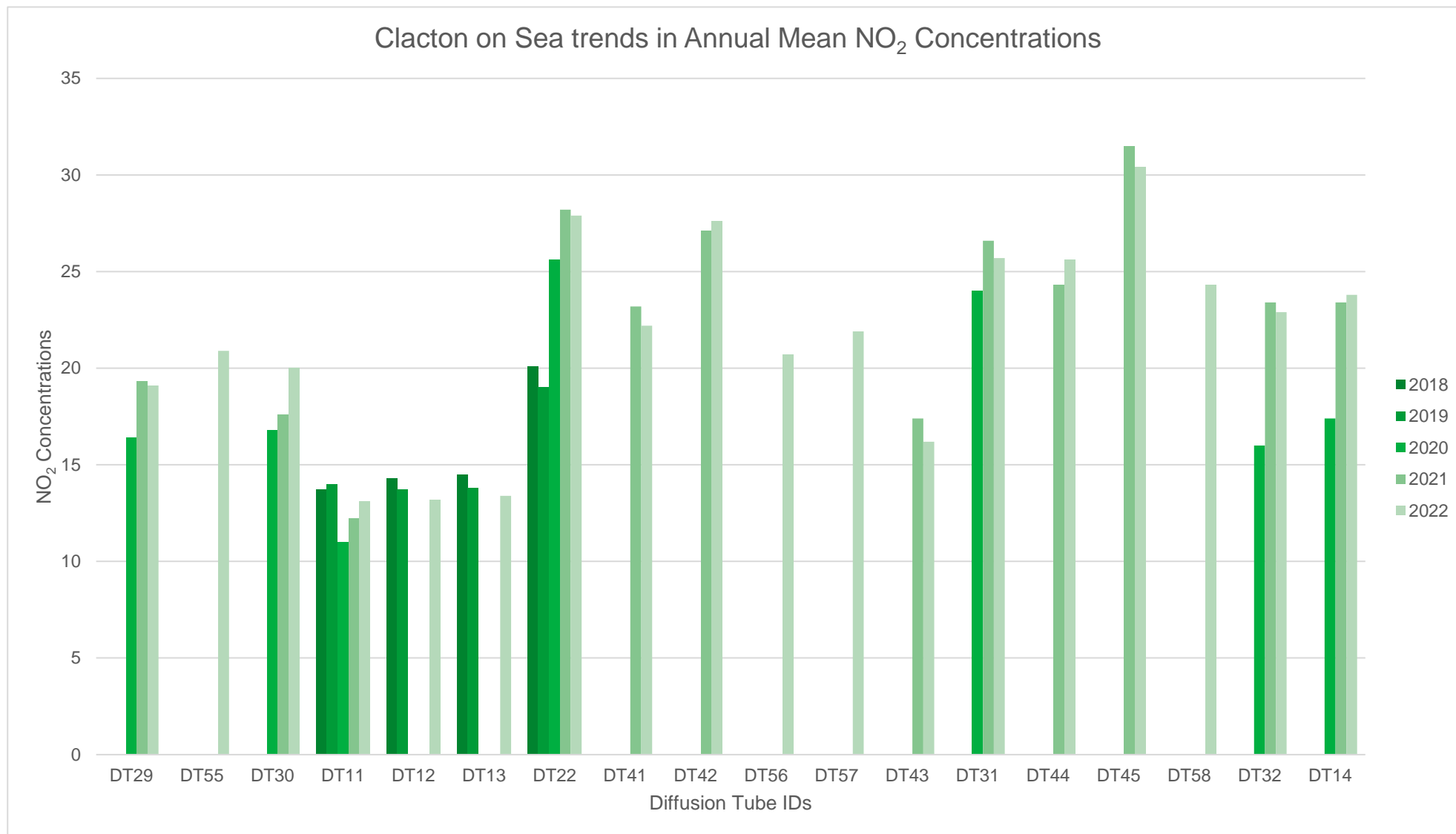


Figure A.2 – Thorpe le Soken, Kirby le Soken, Frinton on Sea and Walton on the Naze Trends in Annual Mean NO₂ Concentrations (Non-Automatic Monitoring)

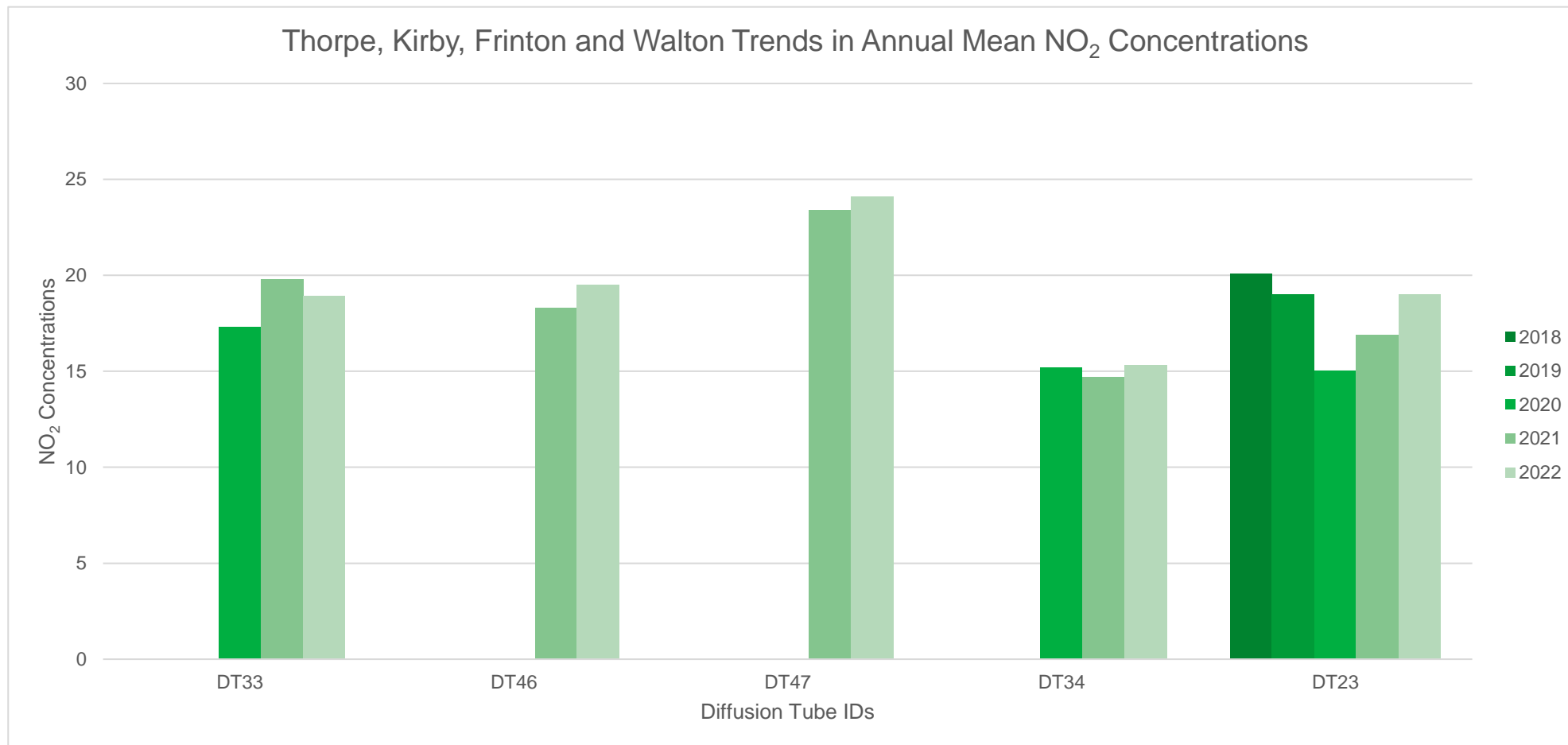


Figure A.3 – Harwich Trends in Annual Mean NO₂ Concentrations (Non-Automatic Monitoring)

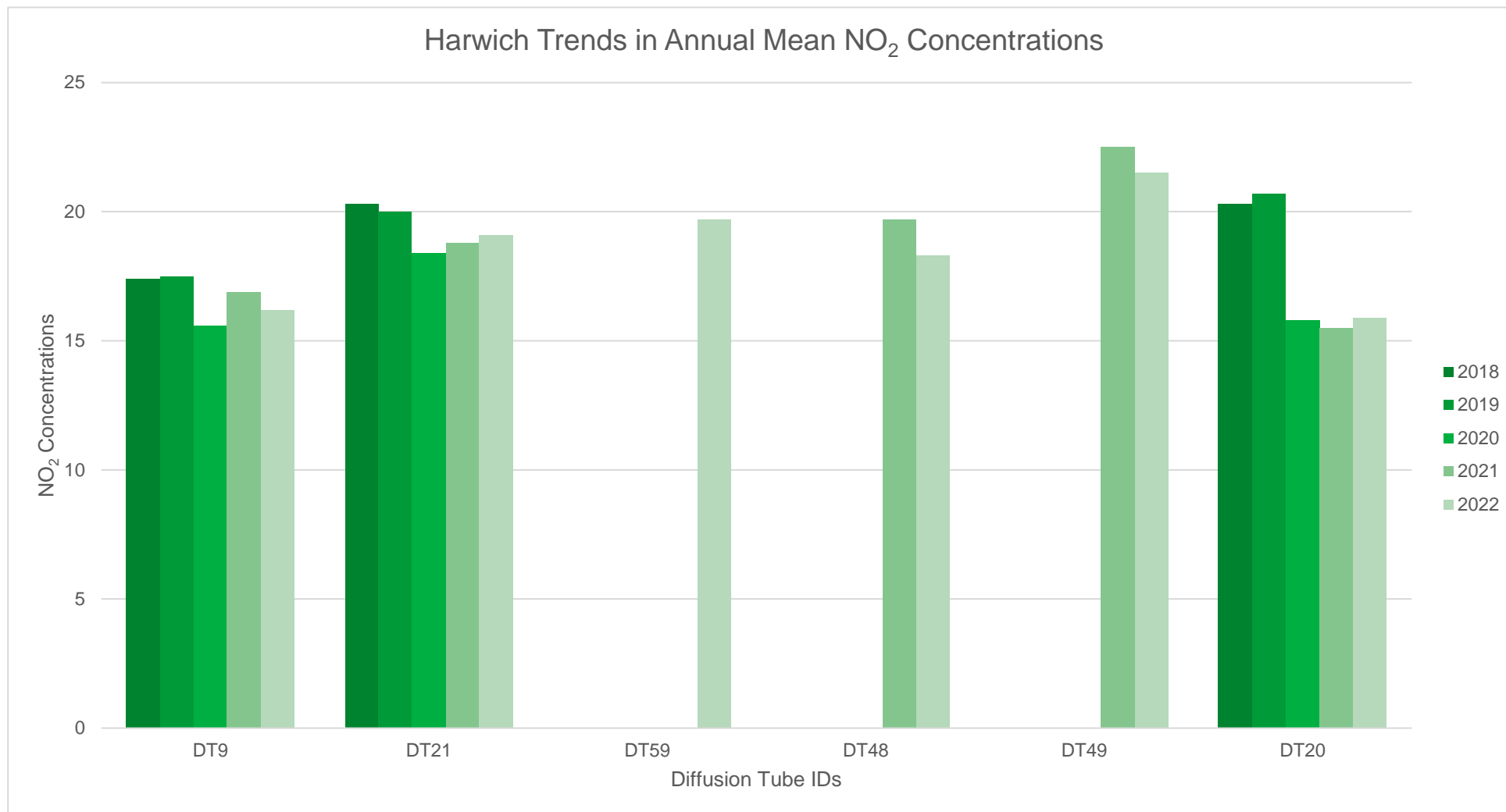


Figure A.4 – Manningtree, Ardeleigh, Frating, Elmstead and St Osyth Trends in Annual Mean NO₂ Concentrations (Non-Automatic Monitoring)

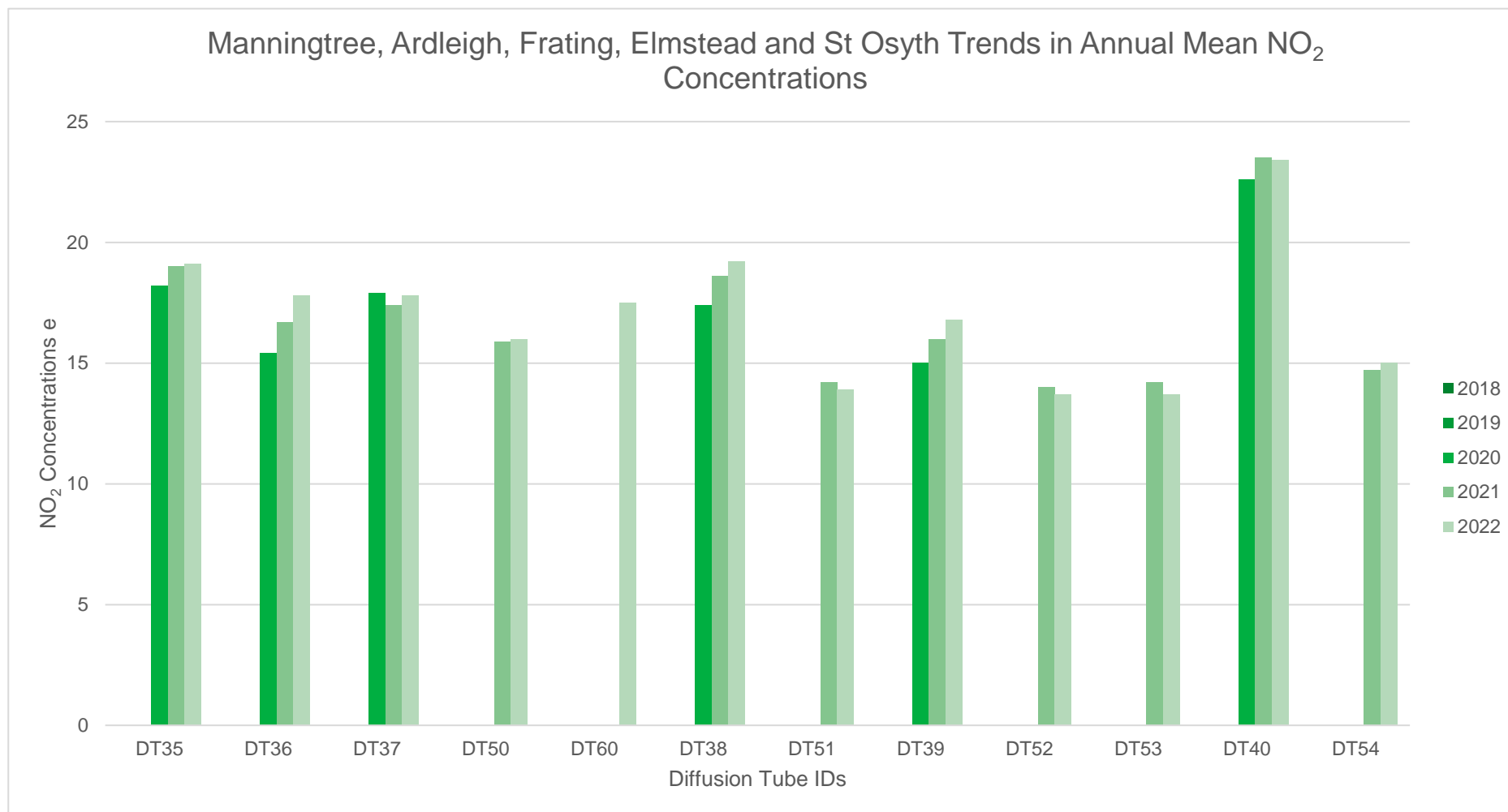


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	610430	213198	Rural Background	86.4	86.4	-	-	-	-	0

Notes:

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

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

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

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

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

Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	610430	213198	Rural Background	75%	75%	N/A	N/A	N/A	N/A	12

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

Figure A.5 – Trends in Annual Mean PM₁₀ Concentrations

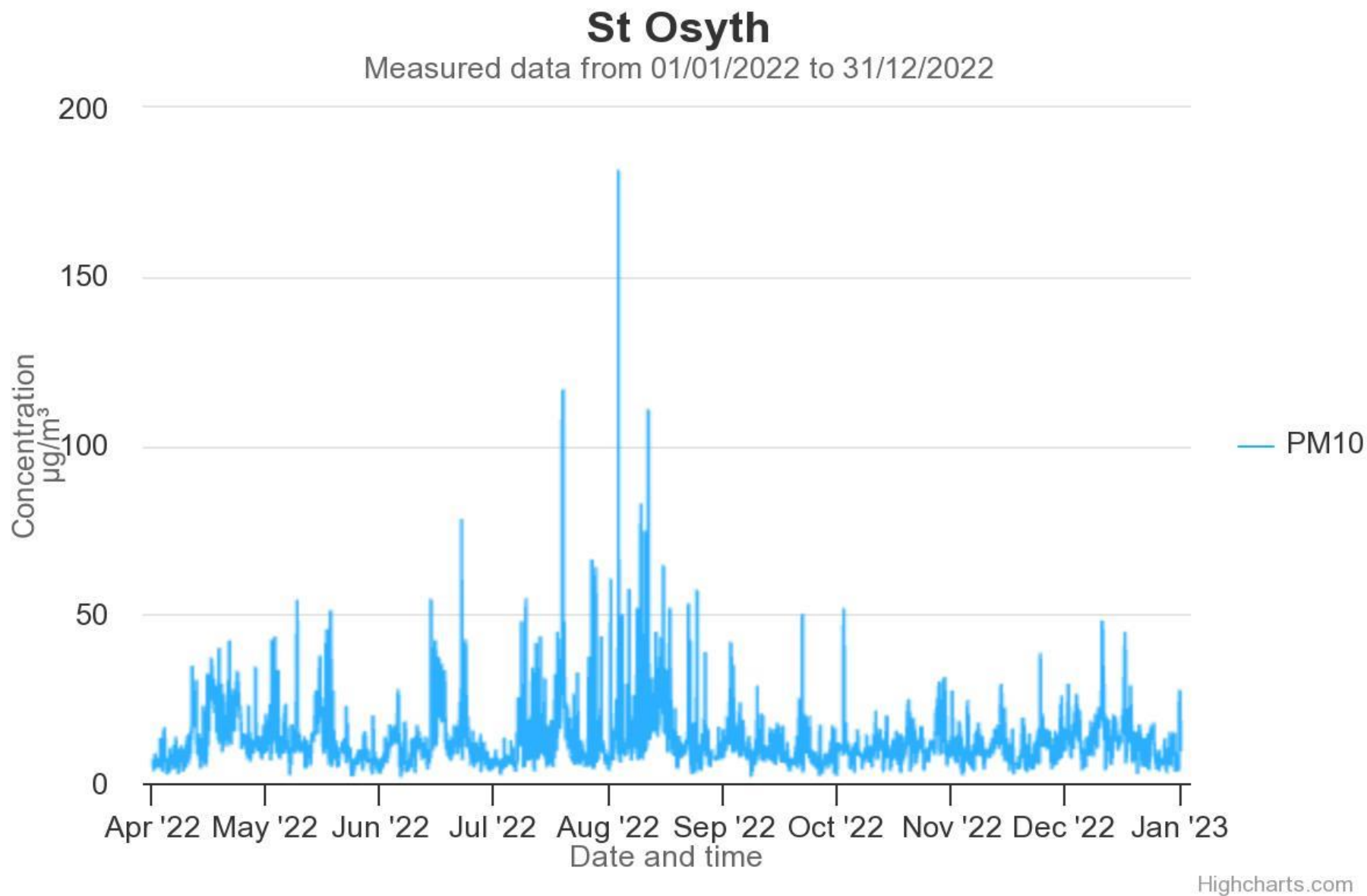


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	410630	213198	Rural Background	99.6	99.6	-	-	-	-	0

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

Notes:

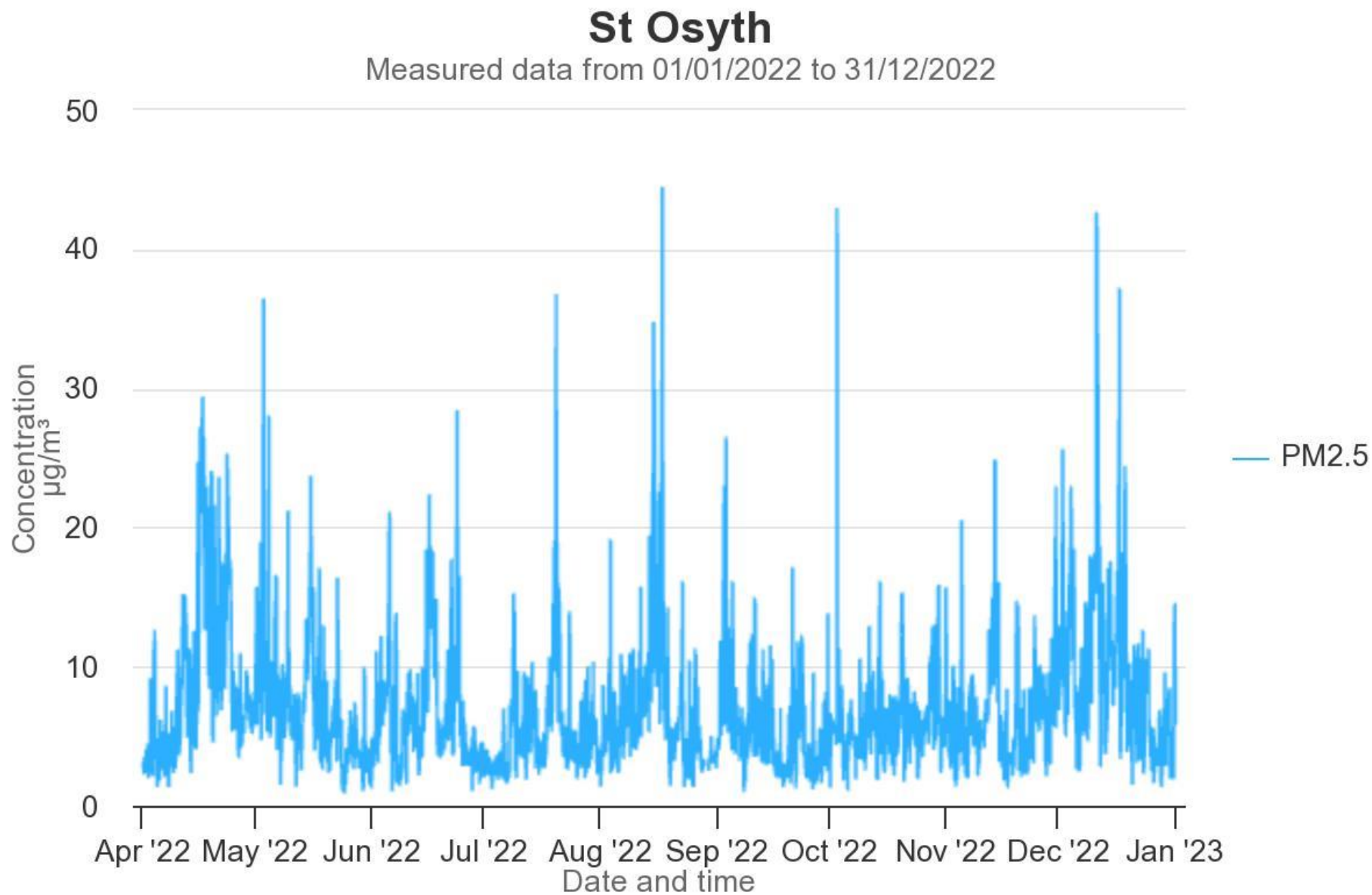
The annual mean concentrations are presented as µg/m³.

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

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

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

Figure A.6 – Trends in Annual Mean PM_{2.5} Concentrations



Highcharts.com

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 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
CM1	610430	213198	Rural Background	75%	75%	N/A	N/A	N/A	N/A	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/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 2022

Table B.1 – NO₂ 2022 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT29	617397	214882	32.4	24.9	36	24	20	18	-	16.8	21	24.5	25	33.5	25.1	19.1	-	
DT55	617569	214716	40.4	27.9	45.5	25.6	23.7	16.6	20.3	-	20.6	-	21.2	32.6	27.4	20.9	-	
DT30	617232	214219	35.4	23.5	46.4	28.8	22.3	18.8	18.4	-	18.1	24.6	-	27.4	26.4	20	-	
DT11	617272	215021	26.2	17.4	26.9	15.1	14.5	11.4	17.4	16.1	11.6	14.6	15.5	20.6	17.3	13.1	-	
DT12	617272	215021	26.5	18.1	26.8	15.1	13.6	11	11.4	16.9	15.8	15.9	16.2	21.7	17.4	13.2	-	
DT13	617272	215021	30.4	16.7	30.3	16	14.9	12.6	13.2	12.4	15.5	17.3	16.6	15.9	17.7	13.4	-	
DT22	617451	215385	54.6	39.2	40.1	30.2	33.8	31.9	34.4	36.4	35.4	37.9	32.6	34.3	36.7	27.9	-	
DT41	617505	215662	48	29.5	36.3	22.9	22.4	21.1	24	23	27.7	23.6	32.6	38.9	29.2	22.2	-	
DT42	617336	215793	51.9	34.7	36.7	34.6	37.8	29.4	28.3	-	33.3	39.3	33.5	39.8	36.3	27.6	-	
DT56	617189	215265	38	26	36.5	25.9	23.2	20.3	24.4	25.8	25.9	26.3	20.8	33	27.2	20.7	-	
DT57	616771	215248	39.8	28.3	43.6	27.7	25	22.7	25.3	27.8	23.8	24.4	26.3	30.6	28.8	21.9	-	
DT43	619671	216499	33.6	26.3	28.5	19.2	18.7	15.7	15.1	18.1	17.1	19.6	19.1	24	21.3	16.3	-	
DT31	617888	216298	45.5	34.4	46.4	27	30.3	29.8	30.9	33.9	23.5	36.4	33.7	34.4	33.9	25.7	-	
DT44	618007	216281	51.5	35.7	39.4	27.1	-	26.4	29.9	30.7	28.9	33.9	28.6	38.5	33.7	25.6	-	
DT45	617618	216487	46.4	30	61.4	38.2	36.2	36	40.7	45.9	36.1	37.4	25.9	45.4	40	30.4	-	
DT58	617654	216434	48.9	31.5	37.7	27.5	31.6	29.5	31	32.7	27.5	30.5	19.8	35.7	32	24.3	-	
DT32	617143	216143	45.8	30.1	38.1	27.2	19.7	21.3	-	24.9	24.2	30.3	31.9	38.2	30.2	22.9	-	
DT14	616163	218287	29.9	21.6	50.8	-	28.3	26.1	34.7	41.5	31.8	26.6	22.4	30.7	31.3	23.8	-	
DT33	617887	222370	43.4	28.6	28.2	22.2	16.9	21.5	22.3	20.2	-	25	16.7	28.2	24.8	18.9	-	
DT46	618042	222315	36	26.6	39	23.6	21.9	18.9	20	22.4	19.2	24.4	26.6	28.8	25.6	19.5	-	
DT47	621992	220859	45.5	34.6	38.1	26.6	-	22.7	25.6	26.4	28	31.9	31.7	37	31.6	24.1	-	
DT34	623643	220058	32.1	23.6	29.2	18.1	17.5	15	15.9	15.5	15.2	16.5	18.6	24.7	20.2	15.3	-	
DT23	625163	221687	24.2	23.5	40.2	26.6	23.3	21	24.7	26	19.8	24.1	17.1	28.9	25	19	-	
DT9	624294	231258	31.2	20.1	34.4	25	16.3	14.5	14.1	19.6	17.1	16.5	-	25	21.3	16.2	-	
DT21	625600	231601	33.6	24.2	39.7	26.6	22.7	18.8	20.5	24.2	21.6	22.6	19.3	27	25.1	19.1	-	
DT59	625464	231556	36.7	26.3	38.3	27.2	22.6	18.8	21	24.3	21.6	20.3	23.8	29.7	25.9	19.7	-	
DT48	625977	232866	37.7	25.2	26.7	24.4	22.6	19.8	19.8	-	20	23.5	22.6	22.2	24	18.3	-	

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 (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT49	623978	231633	37.7	27.6	39.6	28.6	24.9	23.4	24.1	23.3	24.5	32	20.9	33.4	28.3	21.5	-	
DT20	612619	227395	31.5	21.4	26.4	19.5	16.5	15.5	16.6	22.7	19.5	18.9	-	21.9	20.9	15.9	-	
DT35	610596	231858	35.8	27.4	37.7	21.4	21.2	20.5	22.3	25.9	18.6	23.6	19.4	27.8	25.1	19.1	-	
DT36	609595	232190	32.9	25.4	26.9	19	19.6	18.2	18.8	20.3	20.7	23.5	27.1	29.2	23.5	17.8	-	
DT37	609537	231036	34	23.6	30.2	19.5	22.2	17.1	19.3	20.1	20.5	22.1	24.5	27.6	23.4	17.8	-	
DT50	605355	229466	29.8	23	26.4	18.7	16.6	15.7	15.1	16.7	18.2	24	23.1	25.1	21	16	-	
DT60	609093	223293	32.1	23	34.3	20.6	18.9	18.2	21.1	19.8	18.3	23.1	19	27.2	23	17.5	-	
DT38	606168	224553	41.9	27.4	31.6	20.9	20.9	18.8	19	20.7	19	27.3	27.1	27.8	25.2	19.2	-	
DT51	606666	221895	29.7	17.2	24.3	15.8	15	12	14.6	16.1	14.6	17.1	17.7	24.6	18.2	13.9	-	
DT39	608285	217741	33.2	18.6	33.9	20.1	18.3	14.3	18.5	18.8	18.5	21.5	21.8	27.1	22.1	16.8	-	
DT52	608499	216315	28	19.7	28.4	13.9	15.6	13.6	13.7	12.9	13.7	17.9	15.5	23.3	18	13.7	-	
DT53	612322	215566	27.7	-	27.9	16.9	14.8	11.7	15.4	17.5	15.4	17.1	13.6	21	18.1	13.7	-	
DT40	612328	215659	41.4	31.4	34.2	24.7	29.3	27.8	28	30.8	28	27.6	33.6	32	30.7	23.4	-	
DT54	612413	215696	29.1	21.3	30.8	18.1	16	15.2	14.2	17.1	14.2	18.6	18.6	24.3	19.8	15	-	

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- Local bias adjustment factor used.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- Tendring District Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Tendring During 2022

The A120-A133 Link Road will see the creation of a new dual carriageway between the A120 and A133. The tender for the main construction works was published in March 2022 and a revised costing of £90.2million has been set out with a revised completion date of 2025. Tendring District Council will continue to review the development of the Garden Community and the impact it may have on the local air quality.



Surya Foods have submitted a planning application to build a new storage and distribution centre on agricultural land off Old Ipswich Road, Ardleigh. The proposals include 175,000sq ft warehouse space, as well as parking for lorries, office facilities for the company, and landscaping including a lake and the planting of hundreds of trees. The company says it will achieve "a net gain" in biodiversity and has agreed to pay towards highways improvements on the A120/A12 junction. Tendring District Council will continue to review the development and the impact it may have on the local air quality.



The North Falls project has proposed an extension to the existing 504-megawatt Greater Gabbard Offshore Wind Farm, comprising an offshore array area of 150km off the Essex coast and an onshore grid connection in Tendring. It is being developed by a joint venture company owned equally by SSE Renewables and RWE Renewables. The air quality impacts during the operational phase of the project are expected to be negligible. During operation, the proposed built infrastructure would not give rise to any emissions to air and maintenance activities would generate a nominal amount of additional road vehicles which are not expected to give rise to any significant air quality effects.

Additional Air Quality Works Undertaken by Tendring District Council During 2022

Tendring District Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Tendring District Council undertook monitoring of Nitrogen Dioxide using diffusion tubes that were supplied and analysed by SOCOTEC Didcot.

All diffusion tubes were analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes For Ambient NO₂ Monitoring: Practical Guidance.'

The diffusion tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection

All monitoring was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Tendring recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

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/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Tendring District Council have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data. A summary of bias adjustment factors used by Tendring District Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	06/22	0.76
2021	National	03/22	0.78
2020	National	09/19	0.76
2019	National	09/18	0.75
2018	National	09/17	0.77

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website.

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

QA/QC of Automatic Monitoring

There is one automatic (continuous) monitoring site within Tendring. The site is part of the Automatic Urban and Rural Network (AURN) and is operated by Bureau Veritas. Details of calibration, auditing and serving of the automatic monitoring site is not known by Tendring District Council. The Ratification process for the monitoring data presented within the ASR is also not known by Tendring District Council. The live and historic data is available at:

[Data Archive - Defra, UK](#)

Automatic Monitoring Annualisation

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

NO₂ Fall-off with Distance from the Road

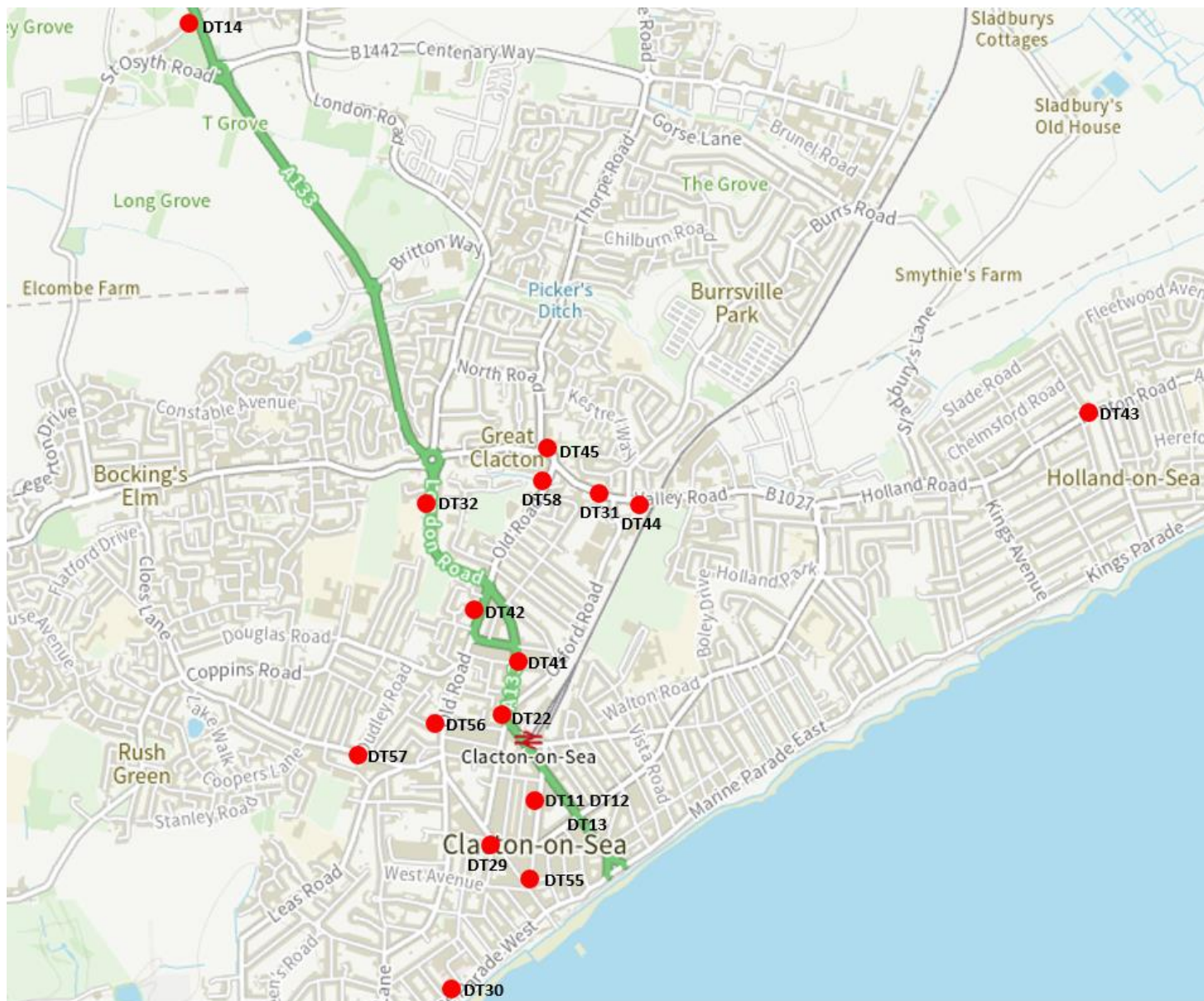
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website.

No automatic NO₂ monitoring locations within Tendring required distance correction during 2022.

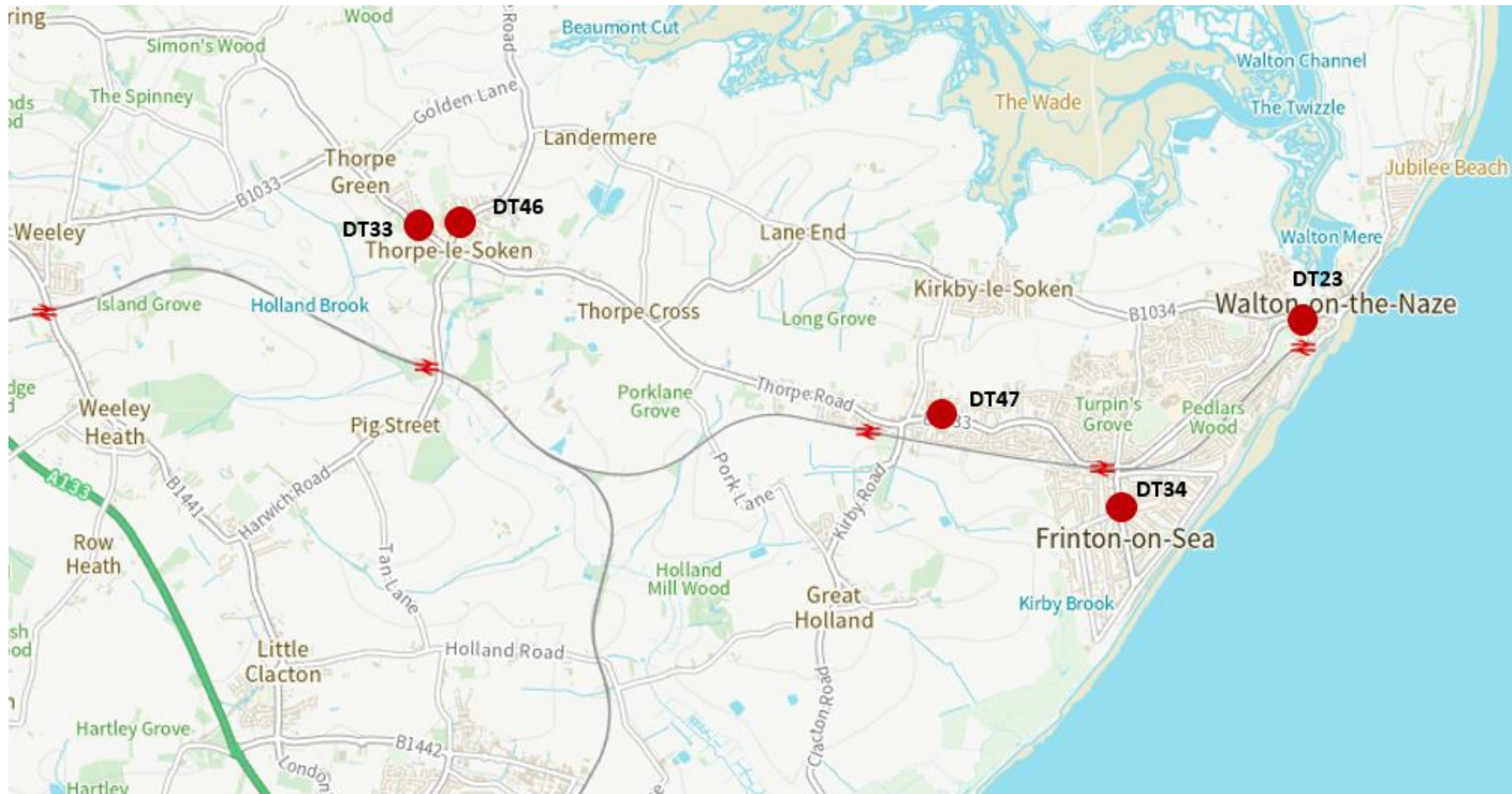
Appendix D: Map(s) of Monitoring Locations and AQMAs

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

Clacton on Sea, Holland on Sea and A133 Monitoring Locations



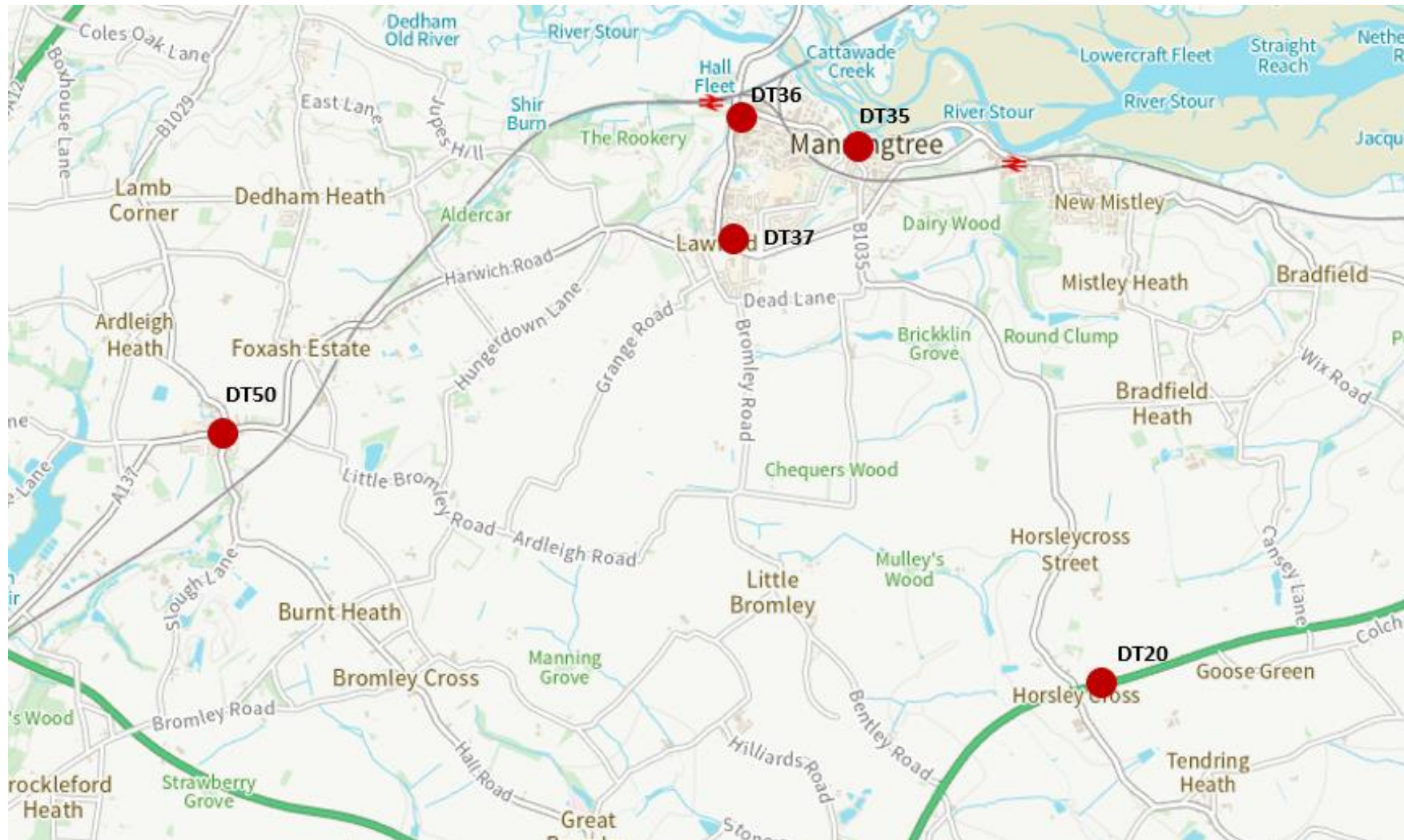
Thorpe le Soken, Frinton on Sea and Walton on the Naze Monitoring Locations



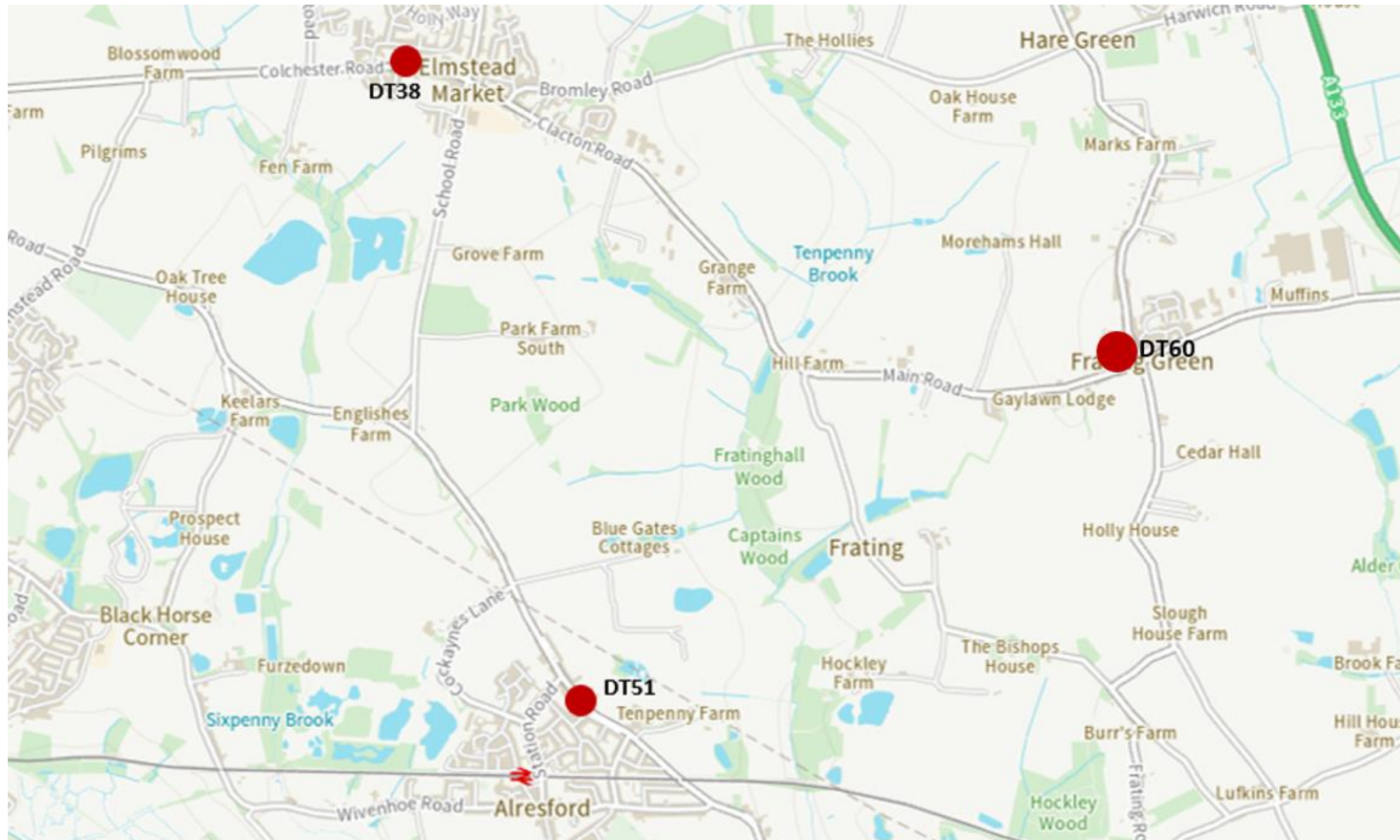
Harwich and Dovercourt Monitoring Locations



Manningtree, Ardleigh and A120 Monitoring Locations



Elmstead, Frating and Alresford Monitoring Locations



Brightlingsea and St Osyth Monitoring Locations



St Osyth Rural Automatic Monitoring Location



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

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

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 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
TDC	Tendring District Council

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.
- [Essex weather: Very high air pollution alert issued with warning to 'avoid main roads' - Essex Live](#)
- [Over 2,000 people attend the Manningtree Earth Festival | InYourArea Community](#)