



East Cambridgeshire District Council

2024 Air Quality Annual Status Report (ASR)

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

June 2024

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Executive Summary: Air Quality in Our Area

Air Quality in East Cambridgeshire

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 year¹.

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 pollution².

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})	<p>Particulate matter is everything in the air that is not a gas.</p> <p>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.</p> <p>PM₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM_{2.5} are particles under 2.5 micrometres.</p>

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

East Cambridgeshire is predominantly rural in character. Air quality is relatively good and has steadily improved over the years. Statutory objectives are being met at all monitoring locations and the council has not designated any areas as Air Quality Management Areas (AQMAs). As in most areas of the country, road traffic emissions are the principal source of poor air quality; and nitrogen dioxide (NO₂) and particulate matter (PM) are the main contaminants of concern.

This Annual Status Report (ASR) contains air quality monitoring data gathered between 1st January and 31st December 2023. East Cambridgeshire District Council monitored NO₂ levels at 27 locations across the district using diffusion tubes. Annual mean NO₂ values were derived for all 27 locations. The annual mean values are based on 11 months data rather than twelve as the results for December 2023 appeared to be exceptionally lower than would be expected. Therefore, all data for the month have been rejected as erroneous. This appears to have been due to processing problems at the SOCOTEC diffusion tube laboratory.

Although not formally part of the LAQM monitoring scheme, full monitoring data for the village of Swaffham Prior has been included in the ASR for the first time. As in many rural areas, buildings in the village are heavily reliant on fuel oil as a heating source. A district heating scheme is being installed to supply properties in the village with thermal energy from renewable sources to reduce their dependence on heating oil and achieve carbon net zero. Although air quality in the village is good, the purpose of the monitoring is to see if air quality improves with the switch from oil to a clean energy source. This monitoring is funded by Cambridgeshire County Council.

For comparison, annual mean NO₂ values for 2022 were available for 20 of the 27 locations. Compared with 2022, 18 of the locations recorded a decrease in NO₂ concentrations in 2023; one recorded a marginal increase; and one location showed no change. The highest annual mean concentration of 18.8 µg/m³ was recorded at NAS19, Broad Street, Ely at the junction with Back Hill. The lowest concentrations were recorded at Berristead Close, Wilburton (6.7µg/m³) and Swaffham Prior village hall (6.1µg/m³). Overall, there is a marked reduction in NO₂ concentrations across the district compared to 2022. Air quality objectives were met at all monitoring locations in 2023 and the year-on-year downward trend in annual mean NO₂ concentrations continued.

Local authorities are not required to monitor for particulate matter (PM), but NO₂ concentration levels serve as an indicator of likely PM concentrations. This ASR has not identified the need to proceed to a Detailed Assessment for any pollutants. No new

significant emission sources have been identified which could lead to poor air quality in the district. Air quality continues to improve despite increases in the population of the district, and road traffic levels having largely returned to pre-pandemic levels.

East Cambridgeshire District Council will continue to operate the NO₂ diffusion tube monitoring programme to demonstrate that air quality objectives continue to be met. The council works with the Cambridgeshire and Peterborough Combined Authority (CPCA), Cambridgeshire County Council, Network Rail, and others to promote measures which improve air quality, such as improving public transport, expanding rail freight and passenger service provision, promoting electric vehicle charging point (EVCP) provision, and promoting active travel. The council will compile and submit a further ASR in 2025.

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 Plan³ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant most harmful to human health. The Air Quality Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁵ 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.

Although air quality in East Cambridgeshire is relatively good, the council supports any actions to maintain and improve air quality. East Cambridgeshire District Council is

³ Defra. Environmental Improvement Plan 2023, January 2023

⁴ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁵ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

working with the CPCA, Cambridgeshire County Council and others to bring about transport improvements which will have a beneficial effect on air quality.

East Cambridgeshire District Council is supporting the CPCA in the preparation and implementation of the Local Transport and Connectivity Plan with a view to improving transport links in the district and beyond and reducing negative impacts on air quality. The Council is working with the CPCA and Network Rail on projects to improve infrastructure and expand rail provision with a particular focus on the busy rail junction north of Ely where five railway lines converge, and which is currently operating at full capacity limiting further growth of passenger and cross-country freight services.

East Cambridgeshire District Council is working with the CPCA with a view to improving bus services in the district and has adopted a Cycling and Walking Routes Strategy which will help promote alternatives to private car journeys. Following a district-wide review of bus services and public consultation the Council is seeking funding from the CPCA to trial new bus services in the district and is working with the environmental transport charity Sustrans to produce feasibility studies for the provision of new cycle routes.

Progress on providing better bus services has been slow as the priority in 2023 has been to maintain existing services rather than expansion or new service provision. The Council declared a climate change emergency in 2019 and has produced an Environmental and Climate Change Strategy and Action Plan setting itself the goal of achieving net zero carbon emissions by 2036. Many of the proposed actions will also help bring about improvements in air quality.

East Cambridgeshire District Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality.

The Council has converted its refuse collection vehicle fleet from diesel fuel to HVO fuel and continues to bring about improvements in air quality by working with the CPCA, Network Rail, and Cambridgeshire County Council to develop plans to improve public transport provision, encourage electric vehicle uptake, and promote active travel. The Council has included improving public transport and promoting active travel as a priority in its Corporate Plan 2023 – 2027 and Corporate Actions July 2023 - July 2024.

Conclusions and Priorities

Air quality in East Cambridgeshire is relatively good and improving. Statutory air quality objectives are being met at all monitoring locations. The Council continues to help maintain and improve air quality by working with others to improve public transport provision, encourage electric vehicle uptake, and promote active travel.

Local Engagement and How to get Involved

East Cambridgeshire District Council works with other public bodies, including the CPCA, Network Rail, and Cambridgeshire County Council to bring about improvements in public transport and active travel provision to help improve air quality. The Council encourages the public to help improve air quality by reducing the number of car journeys they make, consider car sharing, choosing a low emission vehicle, switching off car engines when stationary; and by walking, cycling, and using public transport for journeys wherever possible.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Services Department of East Cambridgeshire District Council with the support and agreement of the Environmental Services Manager and the Director of Operations.

This ASR has been approved by the Chief Executive of East Cambridgeshire District Council.

This ASR has been signed off by the Director of Public Health for Cambridgeshire and Peterborough.

If you have any comments on this ASR please send them to Peter Ord at:

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1 Local Air Quality Management

This report provides an overview of air quality in East Cambridgeshire 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 East Cambridgeshire 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 (AQMA) 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.

East Cambridgeshire currently does not have any declared AQMAs. A local Air Quality Strategy is under development to prevent and reduce polluting activities.

2.2 Progress and Impact of Measures to address Air Quality in East Cambridgeshire

DEFRA's appraisal of last year's ASR concluded that the report had satisfactorily set out all the information required in the Technical Guidance.

East Cambridgeshire District Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. Seven measures are included within Table 2.1, with the type of measure and the progress East Cambridgeshire District Council has 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 2.1.

More detail on these measures can be found in their respective Action Plans. A key completed measure is:

- Shift East Cambridgeshire District Council refuse collection vehicles from diesel fuel to Hydrotreated Vegetable Oil (HVO) fuel. As HVO is a cleaner burning fuel this measure will help to improve air quality. The fleet of 16 vehicles now runs on HVO fuel resulting in lower emissions from the vehicle fleet

East Cambridgeshire District Council expects the following measure to be completed over the course of the next reporting year:

- CPCA Local Transport and Connectivity Plan. This has been published and is awaiting approval by the CPCA board. A separate local strategy for East Cambridgeshire is included within the plan.

East Cambridgeshire District Council's priorities for the coming year are:

- to continue to work with our partners to ensure our active travel infrastructure requirements are included and implemented through partner organisations policy documents such as the CPCA Local Transport and Connectivity Plan
- to improve energy efficiency in homes across the district
- to use the Cycling and Walking Strategy as the basis for influencing change, bidding for funds and negotiating with developers. The Council has prioritised five cycle routes for feasibility exploration and delivery
- to work with the CPCA on a county-wide strategy to roll out EVCPs

East Cambridgeshire District Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Cambridgeshire and Peterborough Combined Authority
- Cambridgeshire County Council
- Network Rail

The principal challenges and barriers to implementation that East Cambridgeshire District Council anticipates facing are the requirement to maintain and improve air quality at a time of increased development pressure and possible cuts in public spending.

Progress on bus service improvements has been disappointing. Although there was an increase in passenger numbers on the Cambridge-Ely-Littleport number 9 service following the introduction of the national £2 maximum single fare, service reliability was impacted by extensive roadworks in the Cambridge area leading to a decline in bus use and further service cuts. The service is now much reduced.

Planning applications for new development in East Cambridgeshire must comply with all relevant national and local policy and technical guidance to protect air quality. This includes the National Planning Policy Framework (Department for Levelling Up, Housing and Communities, 2023); Land Use Planning and Development Control: Planning for Air Quality (Environmental Protection UK and the Institute of Air Quality Management, 2017); and Policy ENV 9 of the East Cambridgeshire Local Plan, 2015 which states that all development proposals should minimise and where possible, reduce all emissions and other forms of pollution and ensure no deterioration in air quality.

Proposals will be refused where there are unacceptable impacts on air quality. Air quality assessments are required for larger developments. Developers are required to produce Construction Environment Management Plans for approval to ensure that air quality is not put at risk during the construction phase of a development.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Bus Service Improvements	Alternatives to private vehicle use	Other	2019	2027	CPCA, ECDC	CPCA	NO	Partially Funded	£50k-£100k	Planning	Not Quantified	Compliance with AQ objectives	Strategy produced	Economic pressures on bus operators, low passenger numbers, lack of funding, roadworks
2	Rail Capacity Improvements	Promoting Low Emission Transport	Other	2019	2030	Network Rail, ECDC	Department of Transport	NO	Partially Funded	> £10 million	Planning	Not Quantified	Compliance with AQ objective	Funding approved for design work for Ely Area Rail Capacity Scheme	Competition for funds with other rail schemes
3	Increase the number of electric vehicle charging points (EVCPs)	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019	2030	CPCA, ECDC	CPCA	NO	Partially Funded	£10k - 50k	Planning	Not Quantified	Measure usage of ECDC controlled EVCPs	CPCA has produced a draft EV Infrastructure Strategy due to be approved in summer 2024	Poor grid capacity out of main town centres may be an inhibitor to rapid charging
4	East Cambridgeshire Cycling and Walking Routes Strategy	Alternatives to private vehicle use	Other	2019	2026	ECDC, CPCA	ECDC, CPCA	NO	Partially Funded	£10k - 50k	Implementation	Not Quantified	Compliance with AQ objectives	Sustrans commissioned to produce a further 5 route feasibility study and further develop existing routes in 2024	
5	Environmental and Climate Change Action Plan	Policy Guidance and Development Control	Other	2019	2036	ECDC	ECDC	NO	Funded	< £10k	Implementation	Not Quantified	Compliance with AQ objectives	Action plans published and updated annually	Many of the measures to achieve carbon net zero will also benefit air quality
6	Local Transport and Connectivity Plan	Alternatives to private vehicle use	Other	2019	2026	CPCA	CPCA	NO	Funded	< £10k	Planning	Not Quantified	Compliance with AQ objectives	Plan has been published but not yet approved by CPCA board	
7	Shift ECDC refuse collection vehicles from diesel fuel to Hydrotreated Vegetable Oil (HVO) fuel	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	2023	ECDC	ECDC	NO	Funded	> £10 million	Completed	Not Quantified	Compliance with AQ objectives	16 vehicle fleet now in service	

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 Strategy⁶, 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.

Under the Health and Social Care Act 2012 the government introduced a Public Health Outcomes Framework (PHOF) which sets out key indicators of the state of public health. An indicator relating to air quality is included:

- D01 – Fraction of mortality attributable to particulate air pollution.

In 2022 this was estimated as 5.5% for East Cambridgeshire; this is below the average for the East of England of 6.2% and the average for England of 5.8%.

East Cambridgeshire District Council does not carry out PM_{2.5} monitoring or take any measures to specifically address PM_{2.5} concentrations. However, measures to reduce road traffic emissions are likely to have the effect of reducing emissions of PM_{2.5}. DEFRA estimates that PM_{2.5} background levels in East Cambridgeshire are between 9 and 11.2ug/m³.

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

- Working with the CPCA through the Local Transport and Connectivity Plan to prioritise sustainable transport alternatives and reduce traffic congestion
- Implementing actions to improve bus and train services and actions identified in the East Cambridgeshire Strategic Cycle/Footpath Strategy to encourage healthy and active travel
- Requiring applicants for planning permission to provide Construction Environment Management Plans to minimise the production of PM_{2.5} and other particulates which might arise during construction work in considering

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

applications for planning approvals for new development under the Town and Country Planning regime

- Moving the council's vehicle fleet to cleaner fuels and reducing business mileage

These measures are not targeted specifically at PM_{2.5} reduction but implementation will have the effect of reducing PM_{2.5} concentrations.

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

This section sets out the monitoring undertaken within 2023 by East Cambridgeshire District 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.

NO₂ concentrations were well within the statutory objectives at all locations. Local authorities are not required to monitor for PM but NO₂ concentration levels serve as an indicator of likely PM concentrations. This ASR has not identified the need to proceed to a Detailed Assessment for any pollutants. No new significant emission sources have been identified which could lead to poor air quality in the district. Air quality continues to improve despite increases in the population of the district, and road traffic levels having largely returned to pre-pandemic levels. It is not necessary to declare any AQMAs in East Cambridgeshire.

East Cambridgeshire District Council will continue to operate the NO₂ diffusion tube monitoring programme to demonstrate that air quality objectives continue to be met. The council works with the Cambridgeshire and Peterborough Combined Authority (CPCA), Cambridgeshire County Council, Network Rail, and others to promote measures which improve air quality, such as improving public transport, expanding rail freight and passenger service provision, providing electric vehicle charging points (EVCPs), and promoting active travel. The council will compile and submit a further ASR in 2025.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

East Cambridgeshire District Council did not undertake any automatic (continuous) monitoring during 2023.

3.1.2 Non-Automatic Monitoring Sites

East Cambridgeshire District Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 27 sites during 2023 using diffusion tubes. Table A.1 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. The maps include locations where monitoring has taken place in previous years as well as in 2023. 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.

Although not formally part of the LAQM monitoring scheme, data for the monitoring carried out in the village of Swaffham Prior has been included in this year's ASR for the first time. As in many rural areas, buildings in the village are heavily reliant on fuel oil as a heating source. A district heating scheme is being installed to supply properties with thermal energy from renewable sources to reduce their dependence on heating oil and achieve carbon net zero. Although air quality in the village is good, the purpose of the monitoring is to see if air quality improves with the switch from oil to a clean energy source. The monitoring is funded by Cambridgeshire County Council.

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.2 in Appendix A compares 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 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).

The full 2023 diffusion tube 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.

This ASR relates to data gathered between 1st January and 31st December 2023. The data supplied for December 2023 show results which appear uncharacteristically lower than would normally be expected. All data for the month is regarded as erroneous and has been removed from the dataset. This appears to have been caused by processing problems at the SOCOTEC laboratory. Annual mean NO₂ values were derived for all 27 locations based on 11 months of data collection.

It has not been necessary to use the annualisation methodology developed by DEFRA and published in LAQM.TG22 to derive any annual mean values as data capture is more than 75% for all sites. All data have been ratified and corrected for bias.

Annual mean NO₂ values for 2022 were available for 20 of the 27 locations across the district. Compared with 2022, 18 of the locations recorded a decrease in NO₂ concentrations in 2023; one recorded a marginal increase; and one location showed no change. The highest annual concentration of 18.8µg/m³ was recorded at NAS19, Broad Street, Ely at the junction with Back Hill. The lowest concentrations were recorded at WIL2, Berristead Close, Wilburton (6.7µg/m³); and SP1, Swaffham Prior Village Hall (6.1µg/m³). Overall, there was a marked reduction in NO₂ concentrations across the district. Air quality objectives were met at all monitoring locations in 2023 and the downward trend in annual mean NO₂ concentrations continued.

Appendix A: Monitoring Results

Table A.1 – 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)
NAS1	Market Street, Ely	Roadside	554154	280427	NO2		0.0	1.5	No	2.5
NAS2	Abbot Thurston Avenue, Ely	Urban Background	554616	281320	NO2		4.5	1.5	No	2.3
NAS3	Station Road, Ely	Roadside	554322	279566	NO2		5.0	1.8	No	2.5
NAS5	Main Street, Littleport	Roadside	556845	280309	NO2		0.0	1.6	No	3.0
NAS8	Sheriffs Court, Burrough Green	Suburban	563721	255387	NO2		2.1	2.1	No	2.3
NAS10	Tramar Drive, Sutton	Urban Background	545012	279286	NO2		5.8	5.8	No	2.3
NAS11	Nutholt Lane, Ely	Roadside	554255	280536	NO2		0.0	0.0	No	2.3
NAS12	A142, Witcham Toll	Roadside	546346	279106	NO2		1.8	1.8	No	2.3
NAS13	A10, Stretham	Roadside	550811	274395	NO2		3.2	3.2	No	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
NAS14	High Street, Burwell	Roadside	558896	266364	NO2		1.5	1.5	No	2.3
NAS15	Hop Row, Haddenham	Roadside	546466	275463	NO2		0.0	1.5	No	3.0
NAS18	Post Office, Wilburton	Roadside	548320	274895	NO2		0.0	1.5	No	2.5
NAS20	Granta Close, Witchford	Roadside	549542	279026	NO2		4.0	1.5	No	2.5
SO3	Station Road, Soham	Roadside	558856	273255	NO2		22.0	1.4	No	2.3
NAS7A	Soham Road, Fordham	Roadside	562046	271019	NO2		5.2	1.2	No	2.3
SO2	Fordham Road, Soham	Roadside	559883	272550	NO2		7.0	1.8	No	2.3
NAS22A	Broad Street, Ely	Roadside	554353	280016	NO2		1.7	1.6	No	2.3
EL1	Back Lane, Ely	Roadside	554420	280133	NO2		0.0	1.0	No	3.0
FO4	Market Street No 2, Fordham	Roadside	562682	270294	NO2		0.0	1.5	No	2.5
KE1	Dane Hill Road, Kennett	Suburban	570329	268858	NO2		1.5	1.5	No	2.3
WIL2	Berristead Close, Wilburton	Urban Background	548439	275193	NO2		22.0	2.1	No	2.3
SP1	Village Hall, Swaffham Prior	Suburban	556764	264098	NO2		17.0	33.0	No	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
SP2	Fairview Grove, Swaffham Prior	Suburban	557211	264351	NO2		9.2	1.9	No	2.3
SP3	Tothill Road, Swaffham Prior	Suburban	557017	263941	NO2		12.7	2.0	No	2.3
NAS23B	Cage Hill, Swaffham Prior	Suburban	557052	264135	NO2		1.7	1.5	No	2.3
SP4	Green Head Road, Swaffham Prior	Suburban	556941	264033	NO2		6.2	1.5	No	2.3
SP5	High Street, Swaffham Prior	Suburban	556735	263877	NO2		0.0	1.5	No	2.3

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 – 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
NAS1	554154	280427	Roadside	92.3	92.3	18.2	14.8	14.4	14.4	13.6
NAS2	554616	281320	Urban Background	92.3	92.3	11.9	9.8	9.3	9.3	8.5
NAS3	554322	279566	Roadside	92.3	92.3	19.5	15.4	15.6	15.9	15.0
NAS5	556845	280309	Roadside	92.3	92.3	15.3	12.8	11.7	12.0	10.9
NAS8	563721	255387	Suburban	92.3	92.3	9.9	8.2	7.4	8.8	6.8
NAS10	545012	279286	Urban Background	92.3	92.3	13.5	11.4	11.1	10.8	10.1
NAS11	554255	280536	Roadside	92.3	92.3	18.6	14.1	13.6	15.0	13.8
NAS12	546346	279106	Roadside	92.3	92.3	25.8	19.9	19.0	19.9	18.8
NAS13	550811	274395	Roadside	92.3	92.3	19.2	14.6	14.6	15.8	14.1
NAS14	558896	266364	Roadside	75	75.0	22.1	13.6	14.3	14.9	13.3
NAS15	546466	275463	Roadside	92.3	92.3	22.4	17.8	17.2	16.8	15.2
NAS18	548320	274895	Roadside	92.3	92.3	30.0	20.8	20.8	20.8	18.2
NAS20	549542	279026	Roadside	92.3	92.3	11.1	8.6	8.3	8.1	8.1

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
SO3	558856	273255	Roadside	92.3	92.3			10.1	10.6	9.5
NAS7A	562046	271019	Roadside	92.3	92.3			14.0	14.2	12.2
SO2	559883	272550	Roadside	92.3	92.3			15.9	15.8	15.9
NAS22A	554353	280016	Roadside	92.3	92.3			20.6	20.2	18.9
EL1	554420	280133	Roadside	92.3	82.7				17.4	16.9
FO4	562682	270294	Roadside	92.3	92.3				13.0	12.6
KE1	570329	268858	Suburban	92.3	92.3					7.5
WIL2	548439	275193	Urban Background	92.3	92.3					6.7
SP1	556764	264098	Suburban	92.3	92.3					6.1
SP2	557211	264351	Suburban	92.3	92.3					8.6
SP3	557017	263941	Suburban	92.3	92.3					8.4
NAS23B	557052	264135	Suburban	92.3	92.3		9.7	11.1	11.0	9.0
SP4	556941	264033	Suburban	92.3	92.3					8.6
SP5	556735	263877	Suburban	92.3	92.3					8.6

- ☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- ☒ Diffusion tube data has been bias-adjusted.
- ☒ Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.

Notes:

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

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

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

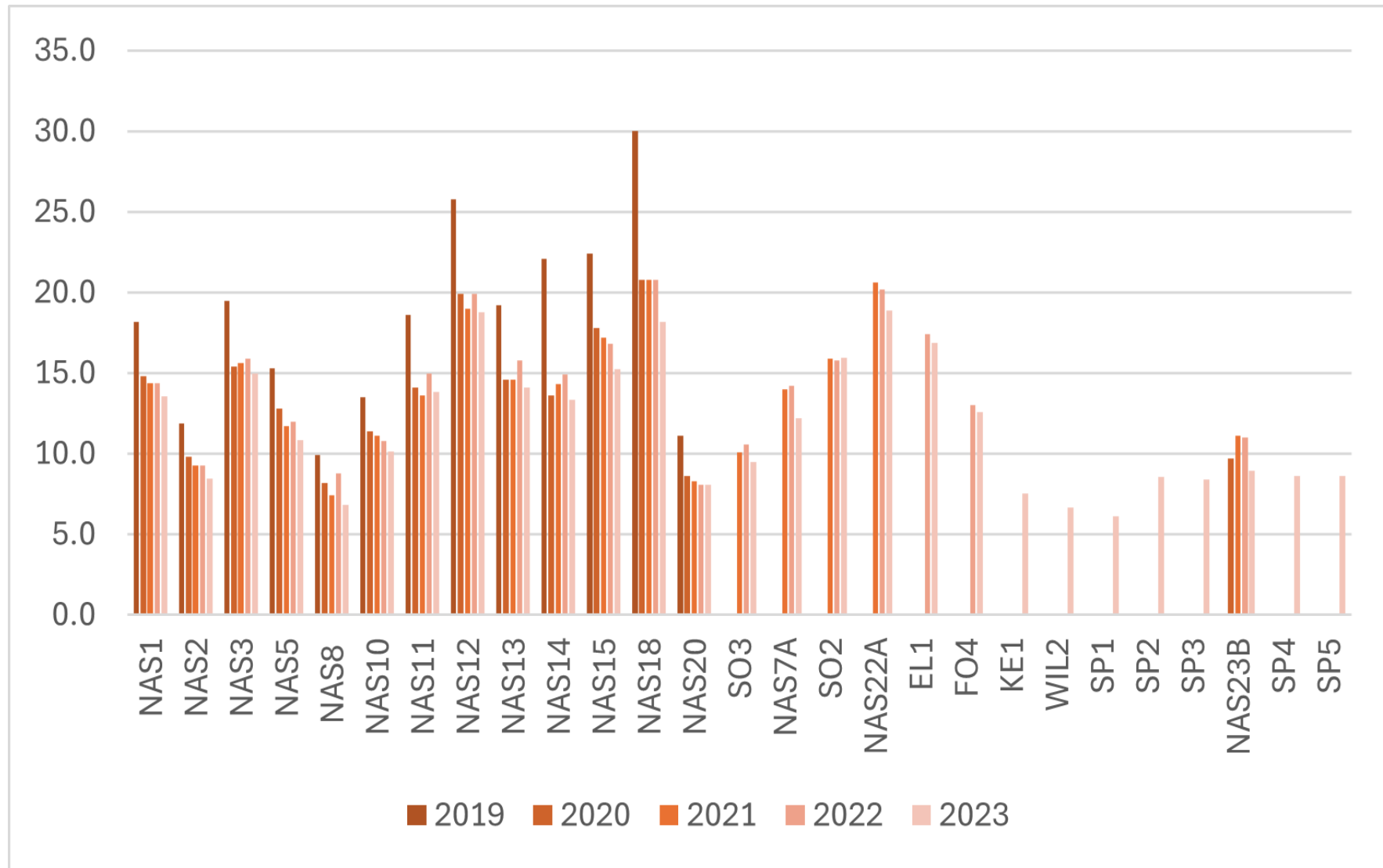
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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 (µg/m³)



Appendix B: Full Monthly Diffusion Tube Results for 2023

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NAS1	554154	280427	26.2	25.2	19.5	14.7	15.1	13.0	11.9	12.6	15.0	18.1	22.4		17.6	13.6	-	December data rejected as
NAS2	554616	281320	16.6	18.2	11.5	8.7	6.3	6.9	7.5	7.9	9.5	14.0	13.7		11.0	8.5	-	erroneous for all monitoring
NAS3	554322	279566	22.5	24.1	17.9	16.5	15.8	17.4	15.9	15.6	20.5	23.4	24.3		19.4	15.0	-	locations
NAS5	556845	280309	20.5	20.1	13.7	13.2	10.3	11.1	10.2	12.1	14.4	16.7	12.9		14.1	10.9	-	
NAS8	563721	255387	12.8	10.2	8.7	6.5	6.9	6.0	6.6	8.3	8.0	10.5	12.7		8.8	6.8	-	
NAS1 ₀	545012	279286	17.1	18.4	14.0	11.3	12.1	10.5	8.1	10.5	12.3	15.4	14.8		13.1	10.1	-	
NAS1 ₁	554255	280536	24.8	25.0	16.9	15.4	14.5	14.0	12.0	14.8	16.3	22.3	21.3		17.9	13.8	-	
NAS1 ₂	546346	279106	29.6	26.3	24.2	25.3	24.6	22.3	16.6	23.8	25.0	25.6	25.1		24.4	18.8	-	
NAS1 ₃	550811	274395	21.1	23.0	20.1	17.9	17.8	18.2	12.0	15.8	19.4	21.0	15.5		18.3	14.1	-	
NAS1 ₄	558896	266364	24.7	27.6			13.8	6.4	14.6	13.6	17.8	19.5	18.0		17.3	13.3	-	
NAS1 ₅	546466	275463	28.2	28.4	19.8	15.5	13.5	14.3	14.3	15.3	18.6	22.7	26.9		19.8	15.2	-	
NAS1 ₈	548320	274895	27.8	33.4	26.0	22.4	12.6	17.3	20.2	20.1	25.1	30.3	24.8		23.6	18.2	-	
NAS2 ₀	549542	279026	16.4	15.7	11.0	8.0	6.7	7.5	6.7	7.6	8.2	12.4	15.4		10.5	8.1	-	
SO3	558856	273255	18.8	18.1	13.6	11.0	7.4	8.9	7.7	9.2	10.8	13.2	16.7		12.3	9.5	-	
NAS7 _A	562046	271019	22.8	24.8	14.5	14.7	8.5	12.8	12.2	13.0	13.6	17.4	20.0		15.8	12.2	-	
SO2	559883	272550	26.5	29.0	17.5	22.6	16.1	16.3	14.8	16.8	18.0	24.2	26.0		20.7	15.9	-	
NAS2 _{2A}	554353	280016	30.8	30.7	26.3	25.1	19.2	22.7	16.3	20.7	27.2	24.5	26.4		24.5	18.9	-	
EL1	554420	280133	31.4	28.5	23.2	18.7	15.4	15.7	16.0		23.4	22.3	24.9		22.0	16.9	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
FO4	562682	270294	20.8	24.8	14.9	15.7	13.7	13.3	11.1	14.9	15.1	15.5	20.0		16.3	12.6	-	
KE1	570329	268858	12.8	13.1	8.5	6.2	7.8	8.2	6.9	7.2	10.1	11.2	15.5		9.8	7.5	-	
WIL2	548439	275193	13.7	15.0	8.7	6.2	5.7	5.4	7.0	5.6	6.7	10.5	11.0		8.7	6.7	-	
SP1	556764	264098	12.8	12.2	7.0	6.5	5.6	5.3	5.3	5.5	7.2	9.6	10.8		8.0	6.1	-	
SP2	557211	264351	18.9	17.5	11.5	10.1	2.4	8.1	7.1	8.2	9.5	12.7	16.4		11.1	8.6	-	
SP3	557017	263941	18.0	16.1	11.4	9.3	7.1	6.8	5.5	7.7	9.4	12.5	15.9		10.9	8.4	-	
NAS2 3B	557052	264135	18.9	17.9	12.6	10.9	9.1	8.0	8.0	9.1	9.7	13.4	10.5		11.6	9.0	-	
SP4	556941	264033	18.6	17.6	13.0	8.8	10.8	6.6	6.1	7.6	9.2	12.1	12.9		11.2	8.6	-	
SP5	556735	263877	16.0	16.5	10.8	9.7	8.5	10.4	7.7	7.9	9.6	13.0	13.2		11.2	8.6	-	

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- Local bias adjustment factor used.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- East Cambridgeshire District Council confirms that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within East Cambridgeshire During 2023

East Cambridgeshire District Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by East Cambridgeshire District Council During 2023

East Cambridgeshire District Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

East Cambridgeshire District Council's diffusion tubes were supplied and analysed by:

SOCOTEC UK
Unit 12, Moorbrook
Southmead Industrial Estate
Didcot,
Oxfordshire OX11 7HP

The tubes were prepared by spiking a 50:50 mixture of acetone and triethanolamine (TEA) onto the grids prior to being assembled.

The DEFRA Local Air Quality Management Helpdesk publishes information on laboratory performance in the precision of diffusion tube analysis. This can be found at:

<http://laqm.defra.gov.uk/diffusion-tubes/precision.html>

For the purposes of LAQM, tube precision is classed as 'Good' or 'Poor' as follows. Tubes are considered to have Good precision where the coefficient of variation (CV) of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%. Tubes are considered to have Poor precision where the CV of four or more periods is greater than 20% and/or the average CV is greater than 10%.

The distinction between Good and Poor precision is an indicator of how well the same measurement can be reproduced. This precision will reflect the laboratory's performance/consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Any laboratory can show Poor precision for a particular period/co-location study if this is due to poor handling of the tubes in the field. In 2023 the SOCOTEC Didcot laboratory received a rating of Good in all 28 studies for 50% TEA in acetone.

The AIR/WASP (Workplace Analysis scheme for Proficiency) NO₂ proficiency testing scheme is an independent analytical testing scheme operated on behalf of DEFRA and the Devolved Administrations to test laboratory proficiency. Details of laboratory performance can be found at: <http://laqm.defra.gov.uk/diffusion-tubes/ga-gc-framework.html>.

SOCOTEC achieved a score of 100% Satisfactory in the latest proficiency table published in November 2023.

However, the laboratory data received by East Cambridgeshire District Council in respect of the monitoring round carried out in December 2023 was rejected as erroneous.

All monitoring has been completed in adherence with the 2023 Diffusion Tube Monitoring Calendar issued by DEFRA.

Diffusion Tube Annualisation

Annualisation was not required for any sites in 2023.

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.

East Cambridgeshire District Council has applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by East Cambridgeshire 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
2023	National	03/24	0.77
2022	National	03/23	0.76
2021	National	06/22	0.78
2020	National	09/19	0.77
2019	National	06/18	0.75

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1. No diffusion tube monitoring locations within East Cambridgeshire required distance correction during 2023.

Appendix D: Maps of Monitoring Locations

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

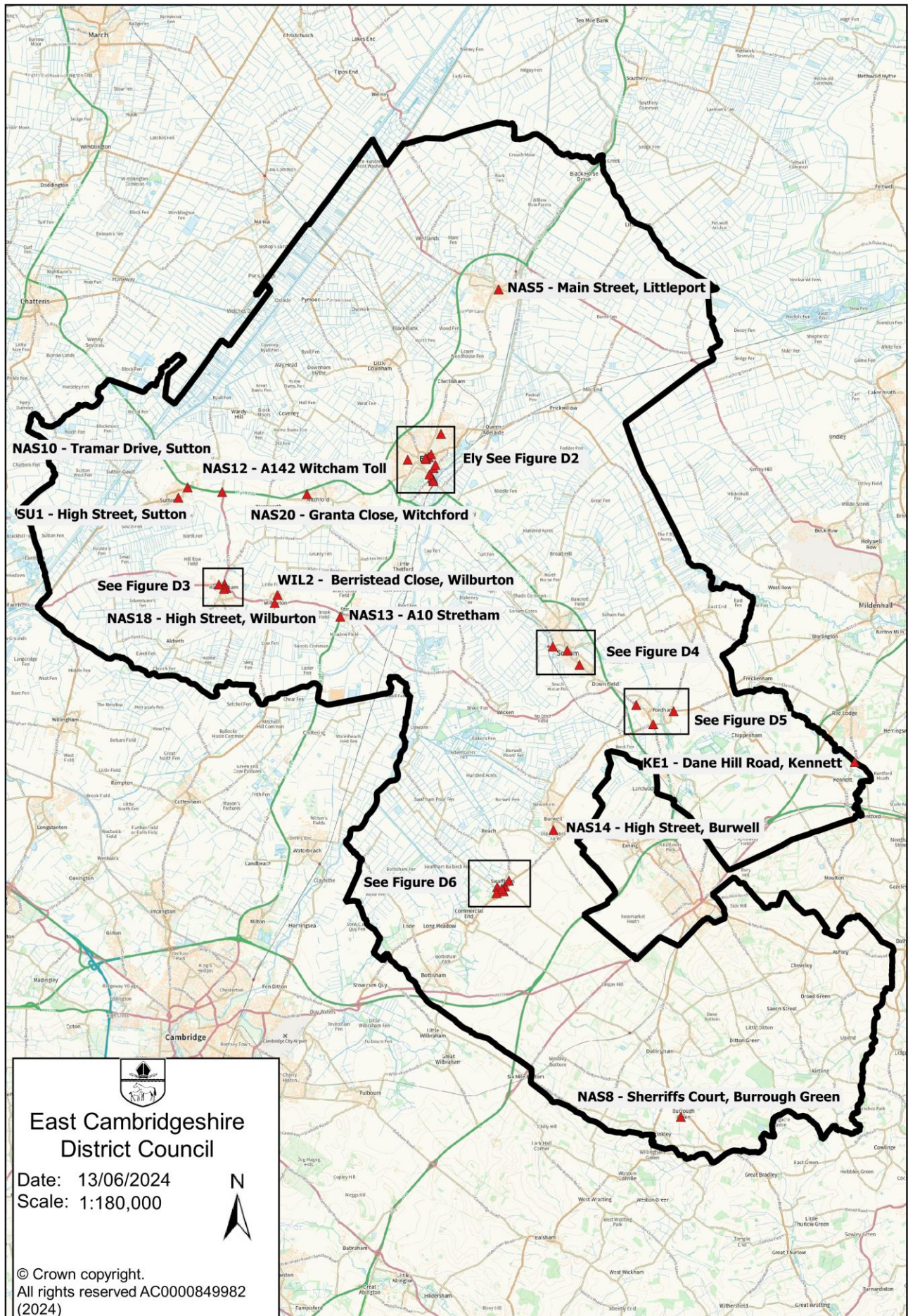


Figure D.2 – Map of Non-Automatic Monitoring Sites in Ely

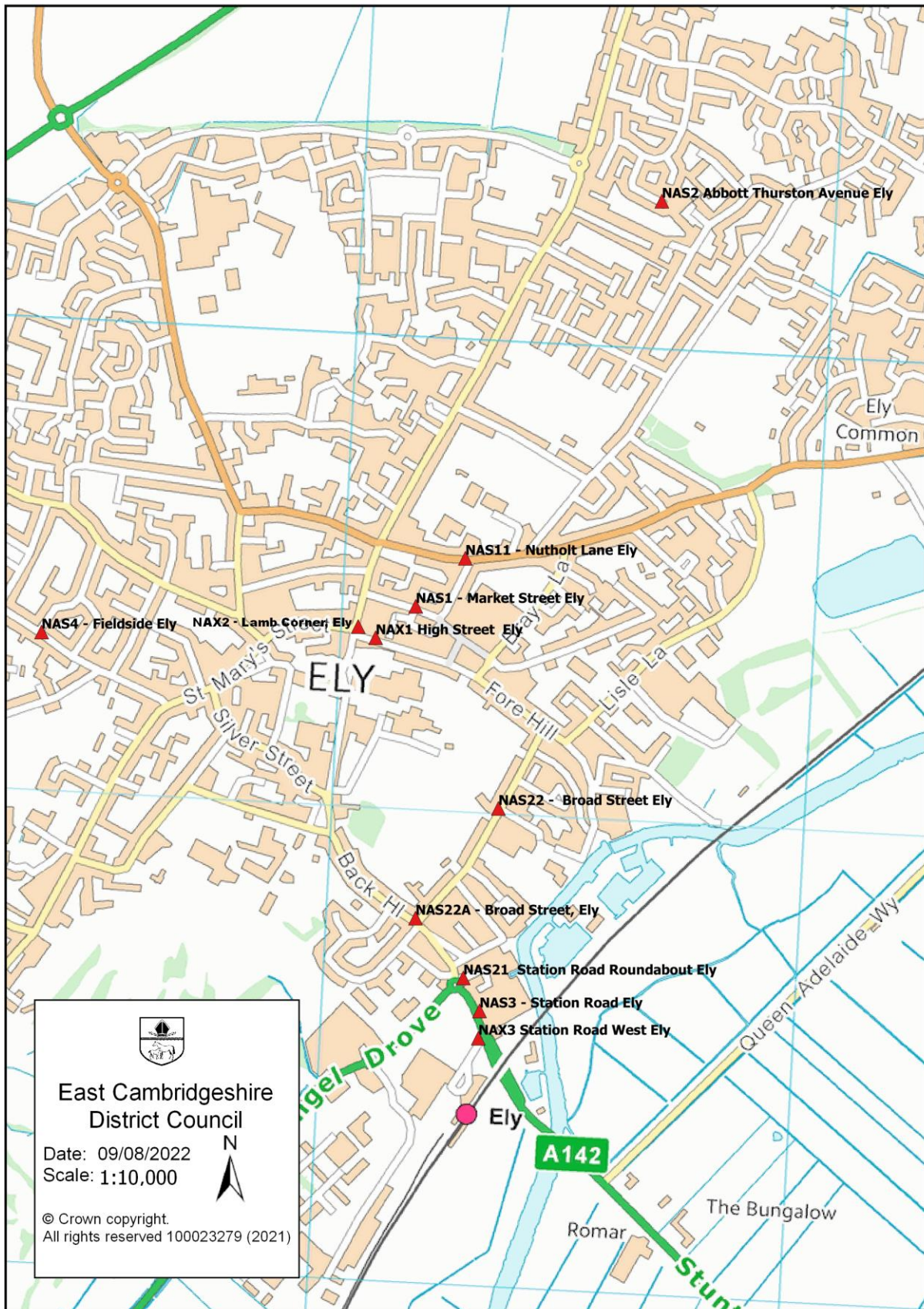


Figure D.3 – Map of Non-Automatic Monitoring Sites in Haddenham



Figure D.4 – Map of Non-Automatic Monitoring Sites in Soham

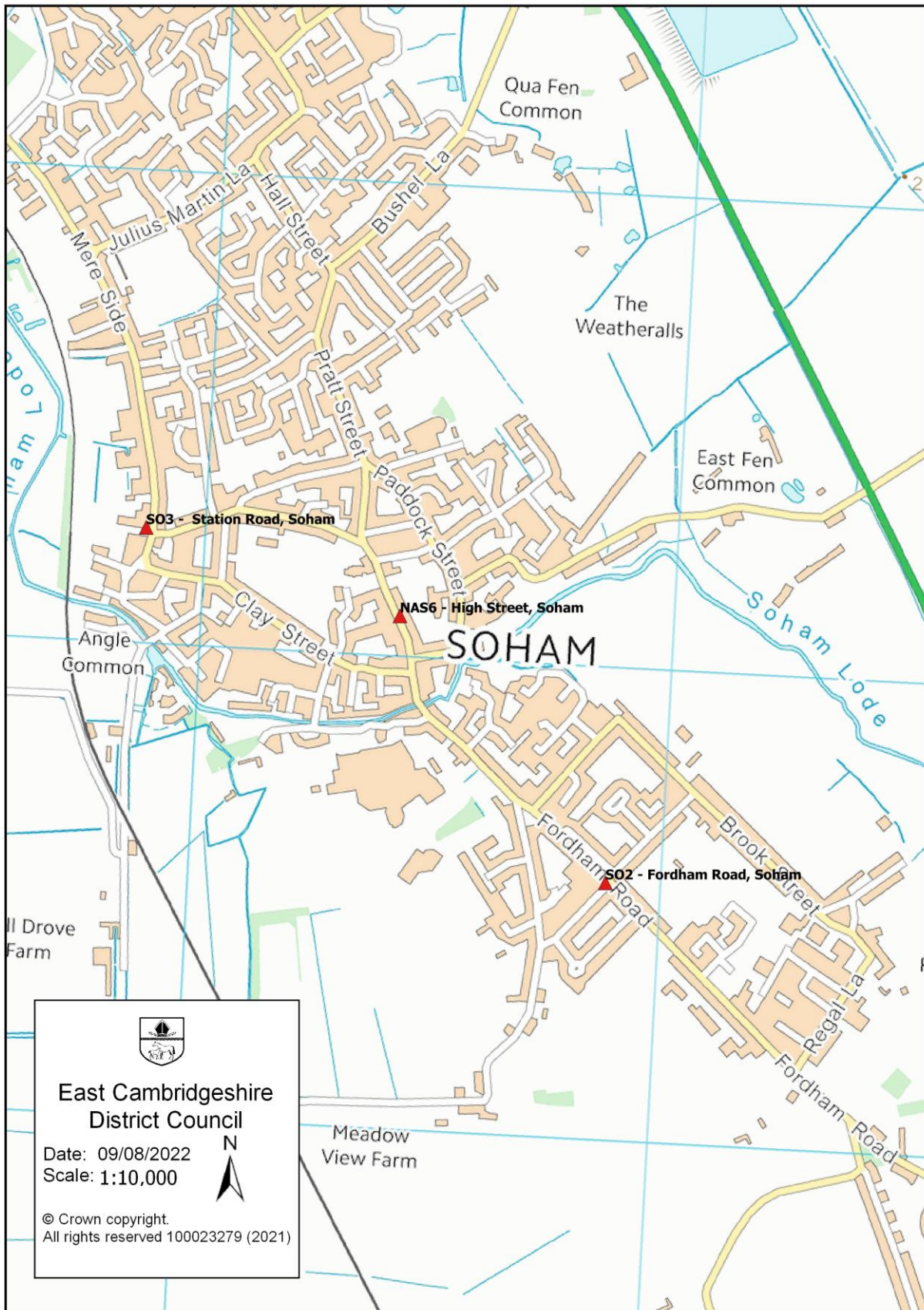


Figure D.5 – Map of Non-Automatic Monitoring Sites in Fordham

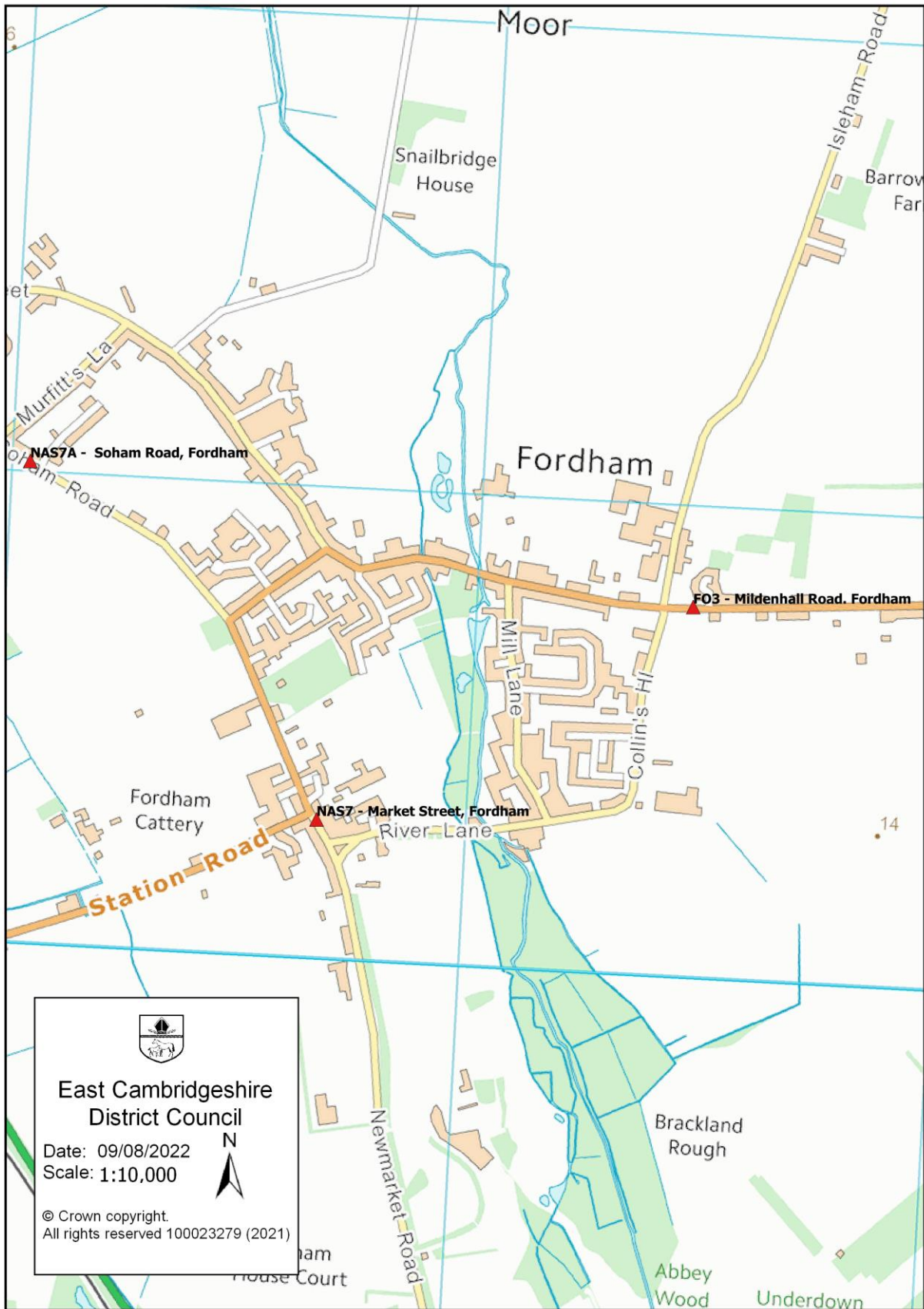
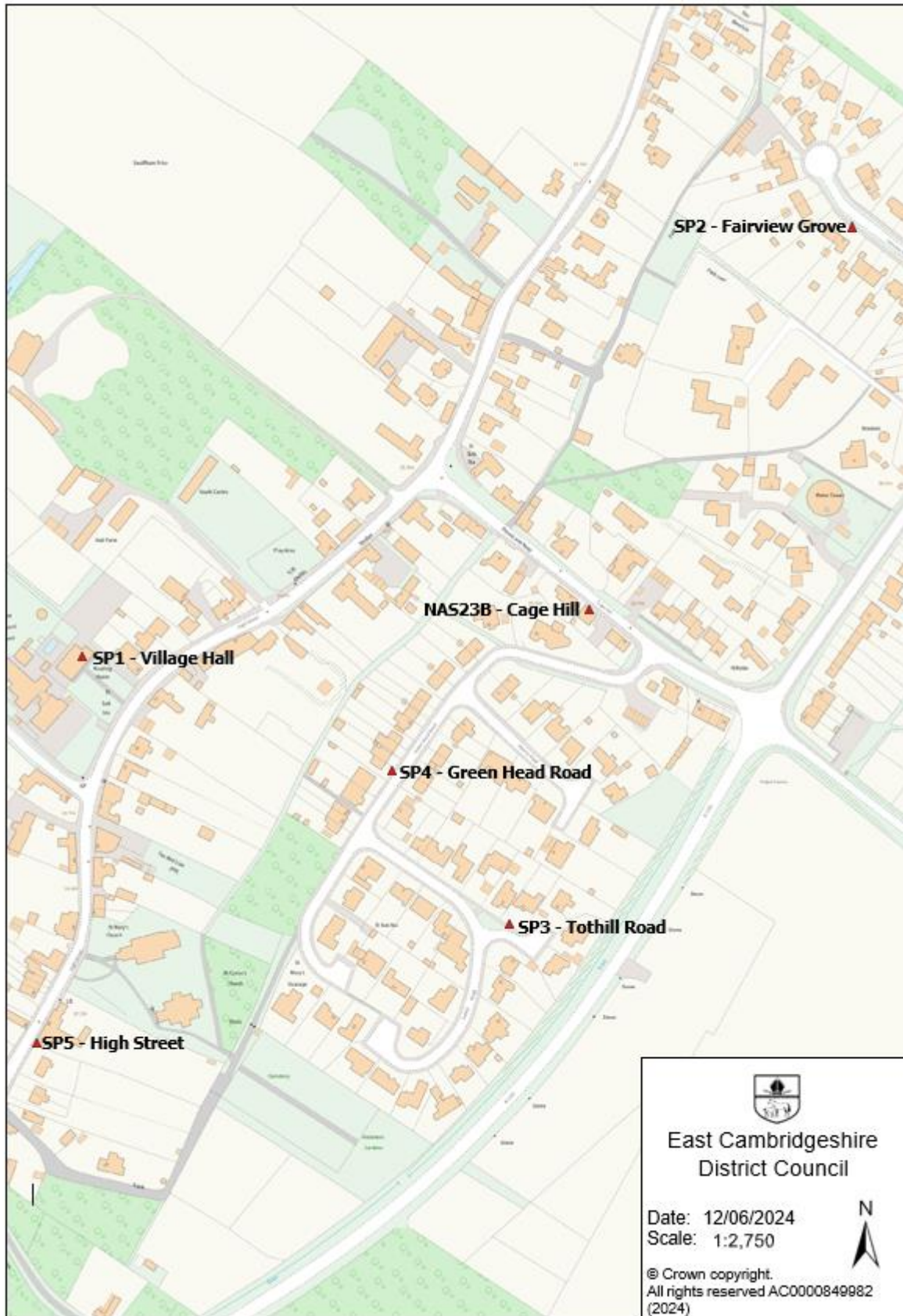


Figure D.6 – Map of Non-Automatic Monitoring Sites in Swaffham Prior



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
CCC	Cambridgeshire County Council
CPCA	Cambridgeshire and Peterborough Combined Authority
DEFRA	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
DT	Diffusion Tube
ECDC	East Cambridgeshire District Council
EU	European Union
EVCP	Electric Vehicle Charging Point
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
TEA	Triethanolamine
µg/m ³	microgrammes per cubic metre

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