



EAST CAMBRIDGESHIRE
DISTRICT COUNCIL

2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995
Local Air Quality Management

June 2022

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Executive Summary: Air Quality in Our Area

Air Quality in East Cambridgeshire

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 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

East Cambridgeshire is predominantly rural in character. Air quality is relatively good and has been improving in recent 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 other areas of the country, road traffic emissions are the principal source of poor air quality and nitrogen dioxide (NO₂) and particulate matter are the main contaminants of concern.

This Annual Status Report (ASR) relates to data gathered between 1st January and 31st December 2021. East Cambridgeshire District Council monitored NO₂ levels at 28 locations across the district using diffusion tubes. A number of tubes were moved to new locations during the course of the year, largely in response to concerns from members of the public about air quality in their own localities. Therefore, a full 12 months of data was not collected at 11 locations. Annual mean values for those locations where data capture

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, July 2021

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

was less than 75% have been obtained by applying the annualisation methodology published by the Department for Environment, Food and Rural Affairs (DEFRA).

Data for previous years is available for 21 locations. When compared with the results for the previous year, 11 of the 21 locations recorded a fall in NO₂ concentrations, 8 recorded an increase, and 2 locations showed no change. However, comparisons with 2020 are of limited value as traffic volumes were lower in 2020 than in 2021 due to the effects of the COVID-19 lockdowns. When the 2021 results are compared with the 2019 figures (pre-COVID-19), all results for 2021 show a marked decrease in NO₂ concentrations. This is generally consistent with findings nationally. The average decrease in measured concentrations is c. 23%.

NO₂ concentrations were well within the statutory objectives at all locations, including those locations where concerns had been raised by members of the public. 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 population and road traffic as engine technology improves and vehicles become less polluting.

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 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 2023.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out 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.

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 working with the Cambridgeshire and Peterborough Combined Authority, 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 development of the new Local Transport and Connectivity Plan and the Strategic Bus Review 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 rail infrastructure and expand provision; with a particular focus on the busy junction at Ely where five railway lines converge and which is currently operating at full capacity limiting further growth of freight and passenger services.

East Cambridgeshire District Council has produced a New Bus Services for East Cambridgeshire prospectus, and has adopted a Cycle/Footpath 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 charity Sustrans to produce feasibility studies for the provision of new cycle routes. 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 2050. Many of the proposed actions will also help bring about improvements in air quality.

⁵ Defra. Clean Air Strategy, 2019

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

Conclusions and Priorities

Air quality objectives were met at all monitoring locations in 2021. The downward trend in annual mean NO₂ concentrations continued in 2021.

East Cambridgeshire District Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality.

The Council will continue to help bring about improvements in air quality by working with the CPCA, Network Rail, and Cambridgeshire County Council to develop transport plans to improve public transport provision and promote active travel. The Council has included improving public transport and promoting active travel as priorities in its Corporate Plan.

Cambridgeshire Health and Wellbeing Board has approved a number of Joint Strategic Needs Assessments (JSNAs). These assessments help determine what actions local authorities, the NHS, and others need to take to meet local health and social care needs; and to address the wider determinants that impact on public health and wellbeing such as traffic and air quality. The Transport and Health JSNA includes a chapter on Air Pollution and recommends that future actions focus on:

- Introducing low emission passenger fleets and vehicles
- Encouraging walking and cycling rather than car use
- Further assessment of short-term measures to reduce exposure

East Cambridgeshire District Council will work with Cambridgeshire County Council and others towards achieving these aims.

East Cambridgeshire District Council supports measures to reduce heavy traffic through towns and villages and encourages all traffic to use the most appropriate route with a particular focus on heavy commercial vehicles with all non-local traffic encouraged to use the strategic road network.

Annual mean NO₂ levels fell by around 23% across the district between 2019 and 2021. This is most likely due to improvements in vehicle emissions reduction technology and a decrease in road traffic movements as a result of COVID-19 restrictions.

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, 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 Council with the support and agreement of the following officers and departments: Richard Kaye, Strategic Planning; and Sally Bonnett, Infrastructure and Strategic Housing.

This ASR has been approved by John Hill, 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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Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in East Cambridgeshire	i
Actions to Improve Air Quality	ii
Conclusions and Priorities	iv
Local Engagement and How to get Involved.....	v
Local Responsibilities and Commitment	v
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 East Cambridgeshire	2
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations	6
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	7
3.1 Summary of Monitoring Undertaken.....	7
3.1.1 Automatic Monitoring Sites	7
3.1.2 Non-Automatic Monitoring Sites	7
3.2 Individual Pollutants.....	7
3.2.1 Nitrogen Dioxide (NO ₂)	8
Appendix A: Monitoring Results	10
Appendix B: Full Monthly Diffusion Tube Results for 2021	18
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	20
New or Changed Sources Identified Within East Cambridgeshire During 2021	20
Additional Air Quality Works Undertaken by East Cambridgeshire During >	20
QA/QC of Diffusion Tube Monitoring	20
Diffusion Tube Annualisation.....	21
Diffusion Tube Bias Adjustment Factors	21
NO ₂ Fall-off with Distance from the Road.....	22
NO ₂ Fall-off with Distance from the Road.....	22
Appendix D: Maps of Monitoring Locations	24
Appendix E: Summary of Air Quality Objectives in England	30
Glossary of Terms	31
References	32

Figures

Figure A.1 – Trends in Annual Mean NO ₂ Concentrations.....	16
Figure D.1 – Map of Non-Automatic Monitoring Sites in East Cambridgeshire.....	25
Figure D.2 - Map of Non-Automatic Monitoring Sites in Ely.....	26
Figure D.3 - Map of Non-Automatic Monitoring Sites in Haddenham.....	27
Figure D.4 - Map of Non-Automatic Monitoring Sites in Soham.....	28
Figure D.5 - Map of Non-Automatic Monitoring Sites in Fordham.....	29

Tables

Table 2.2 – Progress on Measures to Improve Air Quality.....	4
Table A.1 – Details of Non-Automatic Monitoring Sites	10
Table A.2 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)	13
Table B.1 – NO ₂ 2021 Diffusion Tube Results (µg/m ³)	18
Table C.1 – Bias Adjustment Factor	22
Table C.2 – Annualisation Summary (concentrations presented in µg/m ³).....	23
Table E.1 – Air Quality Objectives in England	30

1 Local Air Quality Management

This report provides an overview of air quality in East Cambridgeshire District during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 pursuit of the objectives. 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 (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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

East Cambridgeshire currently does not have any declared AQMAs.

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

DEFRA's appraisal of last year's ASR concluded that during 2020 there continued to be no exceedances of air quality or sites that recorded concentrations within 10% of the annual NO₂ annual mean objective.

East Cambridgeshire District Council has taken forward a number of direct measures during the current reporting year of 2021 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 2021 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. Key completed measures are:

- The opening of the new Soham railway station
- Adoption of actions in the Environmental and Climate Action Plan, including reconfiguration of household waste collection rounds to reduce vehicle mileage

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

- Providing up to 24 EVCPs (electric vehicle charging points) in council car parks to encourage take up of low emission vehicles

Preparing a Travel Plan for the Council to help reduce vehicle mileage

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

- to work with the CPCA and others to improve public transport and promote active travel
- to continue to improve the renewable energy infrastructure to supply ECDC buildings, street lights and storage depots to reduce burning of fossil fuels
- to improve energy improvements in homes across the district
- to use the Cycling and Walking Strategy as the basis for influencing change, bidding for funds, and negotiation with developers
- to progress the delivery of EVCPs in council car parks and working with 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 2021:

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

The principal challenges and barriers to implementation of the measures are the requirement to maintain and improve air quality at a time of increased development pressure and the possibility of budget cuts and curbs on public spending by national government.

The population of the district grew by 11% between 2007 and 2017; and East Cambridgeshire has been set a target of delivering 11,500 new dwellings and 9,200 additional jobs in the current local plan period which runs up to 2031. East Cambridgeshire residents rely heavily on private motor car travel due to the rural nature of the district and a lack of high-quality public transport. Approximately 79% of journeys to work in the district are made by car or van. These factors have the potential to significantly impact air quality. However, air quality has been maintained and improved over recent years despite the increase in population and development pressures.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	Local Transport and Connectivity Plan	Policy Guidance and Development Control	Other policy	2019	2022	CPCA	CPCA	NO	Funded	£100k - £500k	Implementation	Reduction in vehicle emissions not quantified	Compliance with AQ limits	Original transport plan now updated to include connectivity due to changes in work practices, etc.	Funding delayed
2	New railway station at Soham	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2018	2021	Network Rail	CPCA	NO	Funded	> £10 million	Implementation	Completed	Compliance with AQ limits	Building work completed. Station opened December 2021	ECDC is now lobbying for dualling of the track between Soham and Ely to increase capacity
3	Reconfiguration of council bin collection rounds to minimise mileage.	Transport Planning and Infrastructure		2021	2021	ECDC	ECDC	NO	Funded		Implementation	Reduction in vehicle emissions not quantified	Compliance with AQ limits	Implemented	Included in Environmental and Climate Change Strategy Action Plan
4	Ely Area Rail Capacity Enhancement Scheme	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2019	2026	Network Rail	Department of Transport	NO	Partially Funded	> £10 million	Planning	Reduced vehicle emissions	Reduced vehicle emissions	Plans produced and public consultation has taken place	Will allow an increase in freight and passenger traffic passing through Ely, including freight from East Coast ports to Midlands and beyond
5	Strategic Bus Review and Bus Services Improvement Plan 2021	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2019	2020	CPCA	CPCA	NO	Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Reduced vehicle emissions	Review completed. CPCA is now funding new bus services in Cambridgeshire	
6	New Bus Service Proposals for East Cambridgeshire Prospectus and the East Cambridgeshire Cycling and Walking Route Strategy	Alternatives to private vehicle use	Other	2019	2022	ECDC, CPCA	ECDC, CPCA	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Reduced vehicle emissions	. Bid for new CPCA funding to trial new bus routes to improve existing services, and trial demand responsive transport (DRT)	
7	Environmental and Climate Change Strategy Action Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2030	ECDC, local business and environmental organisations	ECDC	NO	Partially Funded	£100k - £500k	Implementation	Reduced vehicle emissions	Reduced vehicle emissions	Action Plan published and updated annually	Goal to be Carbon neutral by 2050 will also help improve air quality. Commitments for 2022/23 include installing

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	
																solar panels at Council offices; providing up to 24 EV charging points in council car parks, and preparing a Travel Plan for the Council to reduce mileage

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), 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.

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 2020 this was estimated as 5.7% for East Cambridgeshire. This is 1% below the average for the East of England. East Cambridgeshire District Council does not carry out 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}.

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

- Working with the CPCA through the Local Transport and Connectivity Plan to prioritise sustainable transport alternatives and reduce congestion
- Implementing actions identified in the New Bus Service Proposals for East Cambridgeshire Prospectus and the East Cambridgeshire Strategic Cycle/Footpath Strategy to encourage healthy and active travel and support people's wellbeing
- 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 applications for planning approvals for new development under the Town and Country Planning regime

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

This section sets out the monitoring undertaken within 2021 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 2017 and 2021 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

East Cambridgeshire District Council did not undertake any automatic (continuous) monitoring during 2021.

3.1.2 Non-Automatic Monitoring Sites

East Cambridgeshire District Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 28 sites during 2021. Table A. 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 the 2021 locations. 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 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.1 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 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 2021 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 Annual Status Report (ASR) relates to data gathered between 1st January and 31st December 2021. A number of tube locations were moved to new locations during the year, largely in response to requests from members of the public concerned about air quality in their own localities. Therefore, a full 12 months of data was not available at 12 locations. The annualisation methodology developed by DEFRA and published in LAQM.TG16 has been used to derive annual mean values where data capture is less than 75%.

Data for previous years is available for 21 locations. When compared with the results for the previous year, 11 of the 21 locations recorded a fall in NO₂ concentrations, 8 recorded an increase, and 2 locations showed no change. However, comparisons with 2020 are somewhat unreliable as traffic volumes were lower in 2020 than in 2021 due to the COVID-19 lockdowns. When the 2021 results are compared with 2019 (pre-COVID-19), all results for 2021 show a marked decrease in NO₂ concentrations. This is generally consistent with findings nationally. The average decrease in measured concentrations is c. 23%.

NO₂ annual mean concentrations at all locations were well within the statutory objectives, including at those locations where concerns had been raised by members of the public. 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 population and road traffic over recent years.

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, Cambridgeshire County Council, Network Rail, and others to promote measures which

improve air quality, such as expanding rail passenger and freight service provision, providing electric vehicle charging points (EVCPs), and promoting active travel.

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	No	0.0	1.5	No	2.5
NAS2	Abbot Thurston Avenue, Ely	Urban Background	554616	281320	NO2	No	4.5	1.5	No	2.3
NAS3	Station Road, Ely	Roadside	554322	279566	NO2	No		1.8	No	2.5
NAS4	Fieldside, Ely	Urban Background	553385	281320	NO2	No	0.9	0.4	No	3.0
NAS5	Main Street, Littleport	Roadside	556845	280309	NO2	No	4.2	1.6	No	2.3
NAS6	High Street, Soham	Roadside	559418	273098	NO2	No	0.0	1.5	No	2.5
NAS7	Market Street, Fordham	Roadside	562682	270294	NO2	No	0.0	1.5	No	2.5
NAS8	Sheriff Court, Burrough Green	Roadside	563721	255387	NO2	No	2.1	1.5	No	2.3
NAS9A	Old School, Wilburton	Roadside	548434	274871	NO2	No	1.2	3.5	No	2.5
NAS10	Tramar Drive, Sutton	Urban Background	545012	279286	NO2	No	5.8	0.8	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)
NAS11	Nutholt Lane, Ely	Roadside	554255	280536	NO2	No	0.0	2.5	No	2.3
NAS12	A142, Witcham Toll	Roadside	546346	279106	NO2	No	1.8	2.7	No	2.3
NAS13	A10, Stretham	Roadside	550811	274395	NO2	No	10.8	3.2	No	2.3
NAS14	High Street, Burwell	Roadside	558896	266364	NO2	No	0.0	1.5	No	2.3
NAS15	Hop Row, Haddenham	Roadside	546466	275463	NO2	No	0.0	1.5	No	3.0
NAS16	High Street, Haddenham	Roadside	546382	275411	NO2	No	0.0	1.0	No	2.3
NAS17	West End, Haddenham	Roadside	546185	275594	NO2	No	0.0	1.5	No	2.3
NAS18	Post Office, Wilburton	Roadside	548320	274895	NO2	No	0.0	1.5	No	2.5
NAS22	Broad Street, Ely	Roadside	554353	280017	NO2	No	0.0	0.7	No	2.5
NAS20	Granta Close, Witchford	Roadside	549542	279026	NO2	No	4.0	1.5	No	2.5
NAS21	Station Road Roundabout, Ely	Roadside	554296	279649	NO2	No		2.0	No	2.6
NAS23B	Cage Hill, Swaffham Prior	Roadside	557052	264135	NO2	No	1.7	1.7	No	2.3
SU1	High Street, Sutton	Roadside	554659	278891	NO2	No	0.0	5.3	No	2.2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
SO3	Station Road, Soham	Roadside	558856	273255	NO2	No	0.0	22.2	No	2.3
NAS7A	Soham Road, Fordham	Roadside	562046	271019	NO2	No	5.2	1.8	No	2.3
SO2	Fordham Road, Soham	Roadside	559883	272550	NO2	No	7.0	3.2	No	2.3
NAS22A	Broad Street, Ely	Roadside	554353	280016	NO2	No	1.7	1.6	No	2.3
FO3	Mildenhall Road, Fordham	Roadside	563460	270786	NO2	No	6.0	3.4	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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
NAS1	554154	280427	Roadside		100.0	19.7	19.4	18.2	14.8	14.4
NAS2	554616	281320	Urban Background		100.0	12.2	11.7	11.9	9.8	9.3
NAS3	554322	279566	Roadside		100.0	30.9	28.9	19.5	15.4	15.6
NAS4	553385	281320	Urban Background		57.7	14.9	14.2	14.5	11.7	9.6
NAS5	556845	280309	Roadside		100.0	15.6	15.2	15.3	12.8	11.7
NAS6	559418	273098	Roadside		32.7	19.4	19.7	17.3	14.6	15.1
NAS7	562682	270294	Roadside		32.7	19.3	17.9	17.2	14.3	14.8
NAS8	563721	255387	Roadside		100.0	10.9	10.2	9.9	8.2	7.4
NAS9A	548434	274871	Roadside		23.1					16.1
NAS10	545012	279286	Urban Background		84.6	14.3	14.8	13.5	11.4	11.1
NAS11	554255	280536	Roadside		100.0	19.4	18.6	18.6	14.1	13.6
NAS12	546346	279106	Roadside		100.0	27.0	26.0	25.8	19.9	19.0

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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
NAS13	550811	274395	Roadside		100.0	18.2	20.2	19.2	14.6	14.6
NAS14	558896	266364	Roadside		92.3	26.5	22.6	22.1	13.6	14.3
NAS15	546466	275463	Roadside		100.0	28.0	23.6	22.4	17.8	17.2
NAS16	546382	275411	Roadside		100.0	17.1	17.9	16.8	13.3	13.9
NAS17	546185	275594	Roadside		100.0	18.3	16.9	18.0	12.4	12.9
NAS18	548320	274895	Roadside		100.0	32.0	29.2	30.0	20.8	20.8
NAS22	554353	280017	Roadside		23.1			24.7	18.6	19.4
NAS20	549542	279026	Roadside		100.0	10.2	11.7	11.1	8.6	8.3
NAS21	554296	279649	Roadside		32.7	32.5	24.1	21.9	17.4	17.2
NAS23B	557052	264135	Roadside		100.0				9.7	11.1
SU1	554659	278891	Roadside		42.3					10.5
SO3	558856	273255	Roadside		67.3					10.1
NAS7A	562046	271019	Roadside		67.3					14.0
SO2	559883	272550	Roadside		76.9					15.9

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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
NAS22A	554353	280016	Roadside		67.3					20.6
FO3	563460	270786	Roadside		59.6					19.3

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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**.

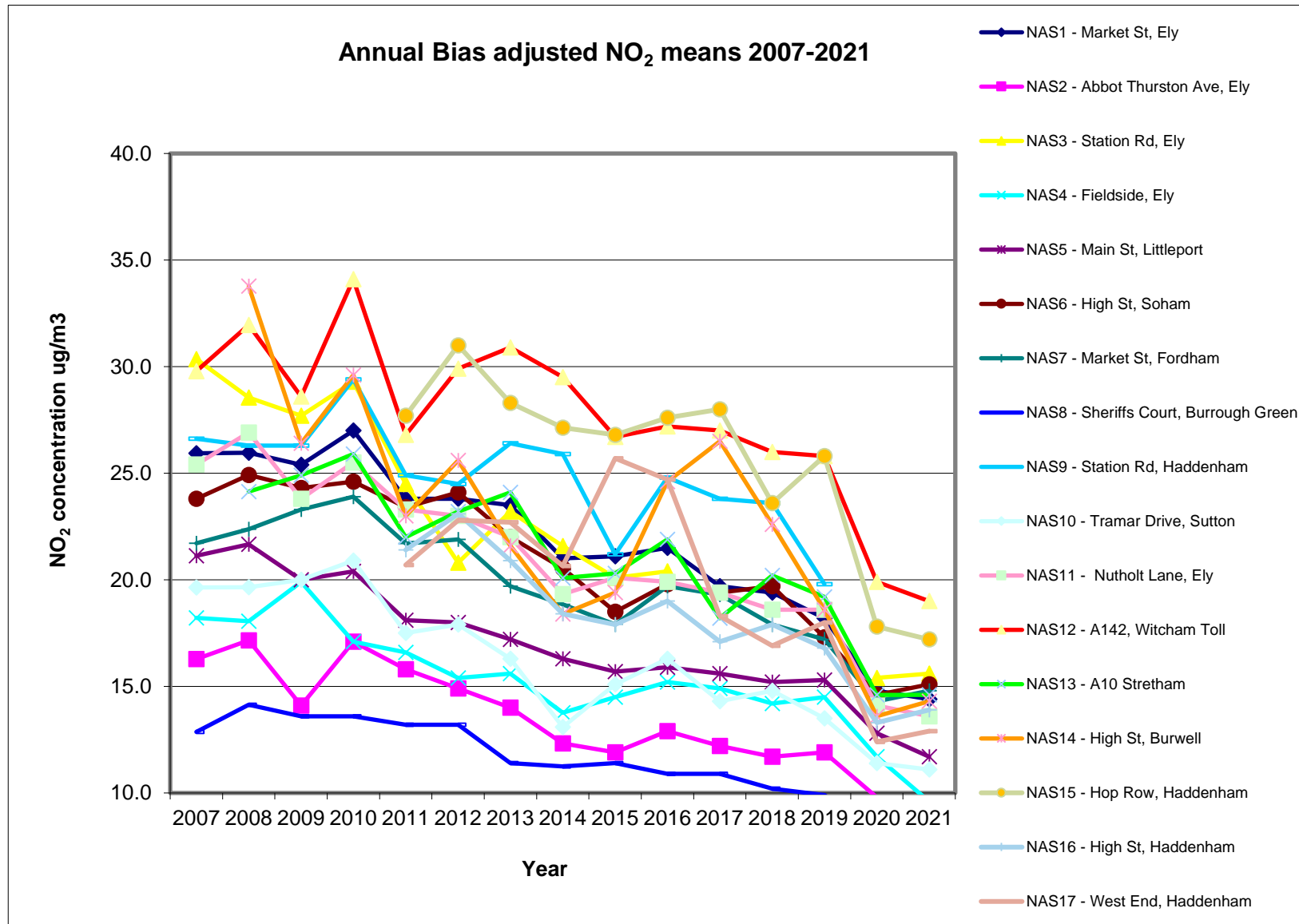
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO₂ 2021 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NAS1	554154	280427	23.7	19.8	16.7	18.6	16.6	15.3	13.3	13.6	18.3	18.3	24.7	22.5	18.5	14.4	-	
NAS2	554616	281320	19.5	15.8	11.4	8.7	9.1	6.4	7.3	6.2	9.7	13.4	17.6	17.4	11.9	9.3	-	
NAS3	554322	279566	23.7	20.4	20.9	16.9	17.6	14.9	16.0	15.1	23.9	22.5	22.9	24.5	19.9	15.6	-	
NAS4	553385	281320	20.8	13.7	13.6	9.5	10.2	6.9	7.1						11.7	9.6	-	
NAS5	556845	280309	22.3	15.6	14.9	13.0	13.3	11.2	10.7	13.1	15.7	14.0	22.4	13.4	15.0	0.781.7	-	
NAS6	559418	273098	25.3	18.7	19.3	18.7									20.5	15.1	-	
NAS7	562682	270294	22.5	22.8	18.1	17.1									20.1	14.8	-	
NAS8	563721	255387	15.8	13.9	7.5	6.0	10.2	5.7	5.6	5.7	8.6	10.3	12.6	12.6	9.5	7.4	-	
NAS9 A	548434	274871	25.4	20.6	22.4										22.8	16.1	-	
NAS1 0	545012	279286		18.0		15.1	11.3	9.0	10.1	13.8	15.2	14.4	20.1	15.3	14.2	11.1	-	
NAS1 1	554255	280536	23.3	13.8	15.9	14.5	14.5	13.5	13.8	11.6	20.8	19.0	24.2	23.9	17.4	13.6	-	
NAS1 2	546346	279106	30.0	29.2	17.1	25.5	27.0	18.6	26.4	16.8	26.6	24.8	25.1	25.0	24.3	19.0	-	
NAS1 3	550811	274395	22.3	25.4	18.5	13.5	18.0	17.6	17.7	13.0	21.9	17.0	17.2	21.9	18.7	14.6	-	
NAS1 4	558896	266364		20.7	18.1	17.6	17.1	17.6	16.2	13.1	14.6	19.2	27.4	19.4	18.3	14.3	-	
NAS1 5	546466	275463	25.8	21.8	23.0	19.7	21.4	18.4	18.7	16.6	24.1	22.2	29.4	23.2	22.0	17.2	-	
NAS1 6	546382	275411	22.2	23.3	18.1	20.6	13.7	14.6	14.2	11.9	17.9	15.8	20.0	21.4	17.8	13.9	-	
NAS1 7	546185	275594	20.1	19.4	14.6	15.4	13.4	13.6	13.7	11.7	17.8	16.5	22.7	18.8	16.5	12.9	-	
NAS1 8	548320	274895	28.2	25.3	28.1	24.4	24.1	23.2	23.5	19.1	29.5	31.5	34.5	29.0	26.7	20.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NAS2 ₂	554353	280017	30.6	23.9	27.7										27.4	19.4	-	
NAS2 ₀	549542	279026	17.0	13.2	9.3	10.2	8.8	6.8	6.4	6.3	10.9	10.2	13.3	15.1	10.6	8.3	-	
NAS2 ₁	554296	279649	31.5	22.9	23.0	16.3									23.4	17.2	-	
NAS2 _{3B}	557052	264135	20.0	16.9	13.1	11.4	11.9	13.3	8.9	7.4	12.9	15.1	21.7	18.3	14.2	11.1	-	
SU1	554659	278891								10.9	13.8	10.9	19.7	17.3	14.5	10.5	-	
SO3	558856	273255					12.0	9.4	10.1	8.6	14.1	13.8	18.9	13.3	12.5	10.1	-	
NAS7 _A	562046	271019					17.3	13.1	11.6	10.5	19.5	18.6	25.0	22.6	17.3	14.0	-	
SO2	559883	272550				19.4	20.8	14.5	15.8	14.5	20.2	21.2	30.6	26.0	20.3	15.9	-	
NAS2 _{2A}	554353	280016					25.3	19.1	24.2	20.0	31.0	27.5	28.4	28.6	25.5	20.6	-	
FO3	563460	270786					20.4	22.3	18.5	19.8	26.0	25.1		25.4	22.5	19.3	-	

- 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.TG16.
- 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 2021 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 2021

East Cambridgeshire District Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by East Cambridgeshire District Council During 2021

East Cambridgeshire District Council has not completed any additional works within the reporting year of 2021.

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 2021 Socotec received a rating of Good in 22 out of 25 studies for 50% TEA in acetone, and Poor in 3 studies.

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 proficiency testing round carried out in 2021.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. East Cambridgeshire District Council applied annualisation in line with LAQM.TG16 in respect of 11 sites. Details are shown in Table C2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 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.TG16 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 0.78 to the 2021 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
2021	National	06/22	0.78
2020	National	09/19	0.77
2019	National	06/18	0.75
2018	National	09/17	0.77
2017	National	06/16	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. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO₂ monitoring locations within East Cambridgeshire required distance correction during 2021.

NO₂ Fall-off with Distance from the Road

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

No automatic NO₂ monitoring locations within East Cambridgeshire required distance correction during 2021.

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Site 1 Wicken Fen	Annualisation Factor Site 2 Cambridge Roadside	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
NAS4	1.0122	1.0868			1.0495	11.7	12.3	
NAS6	0.8123	1.0705			0.9414	20.5	19.3	
NAS7	0.8123	1.0705			0.9414	20.1	18.9	
NAS9 A	0.7320	1.0807			0.9063	22.8	20.7	
NAS2 2	0.7320	1.0807			0.9063	27.4	24.8	
NAS2 1	0.8123	1.0705			0.9414	23.4	22.1	
SU1	0.9838	0.8773			0.9305	14.5	13.5	
SO3	1.1228	0.9526			1.0377	12.5	13.0	
NAS7 A	1.1228	0.9526			1.0377	17.3	17.9	
NAS2 2A	1.1228	0.9526			1.0377	25.5	26.5	
FO3	1.2121	0.9848			1.0984	22.5	24.7	

Appendix D: Maps of Monitoring Locations

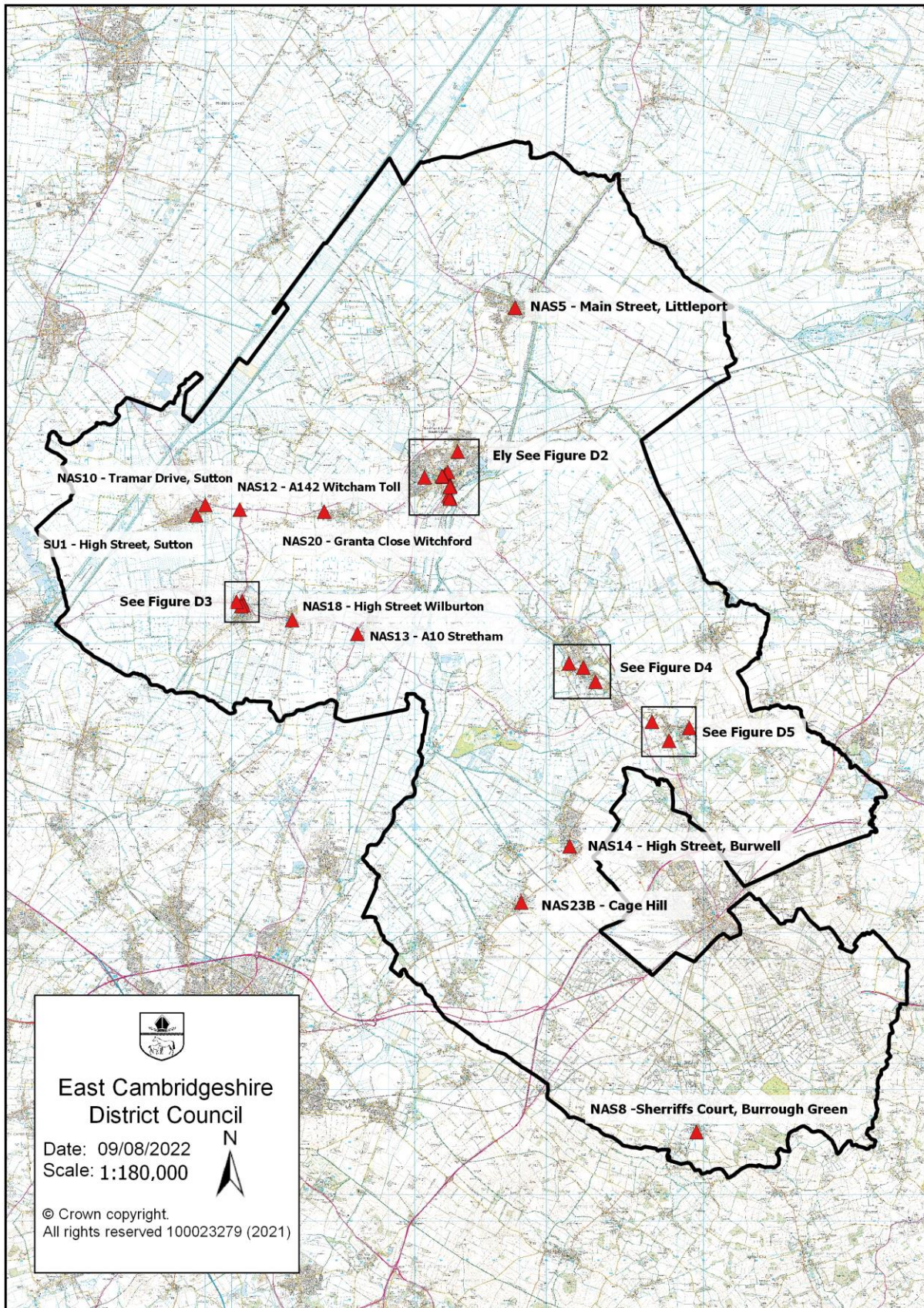


Figure D.1 – Map of Non-Automatic Monitoring Sites in East Cambridgeshire

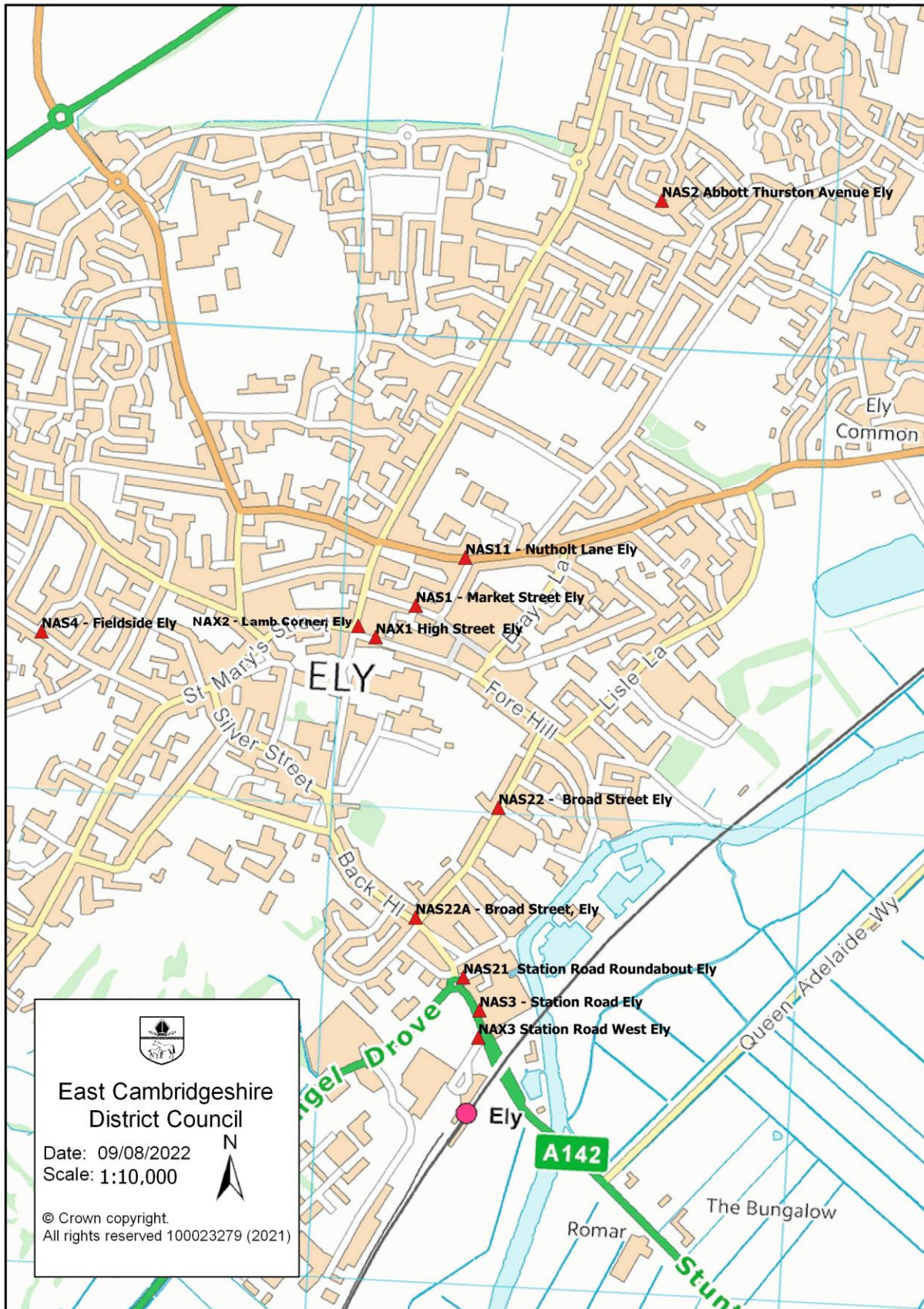


Figure D.2 – Map of Non-Automatic Monitoring Sites in Ely



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

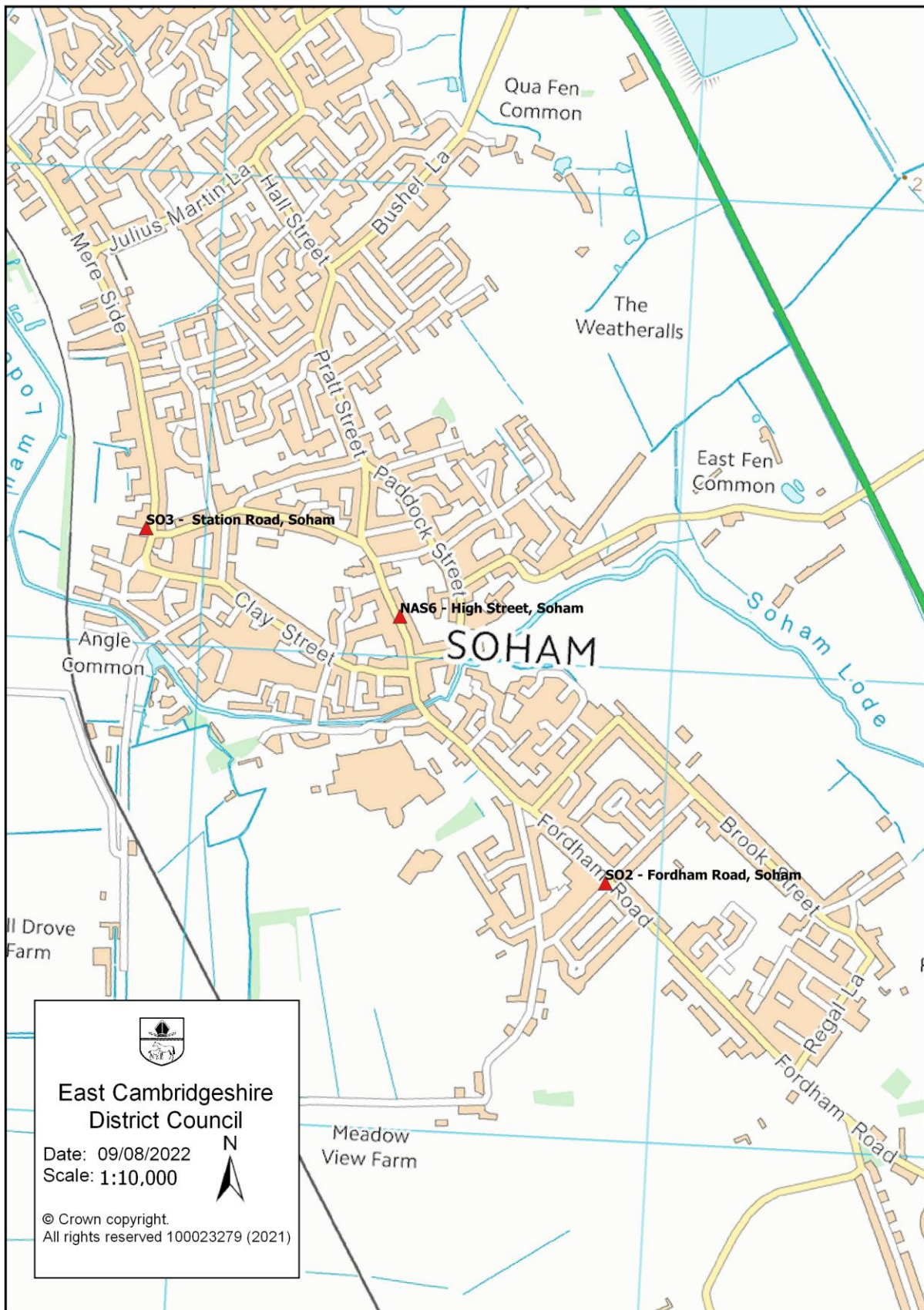


Figure D.4 – Map of Non-Automatic Monitoring Sites in Soham

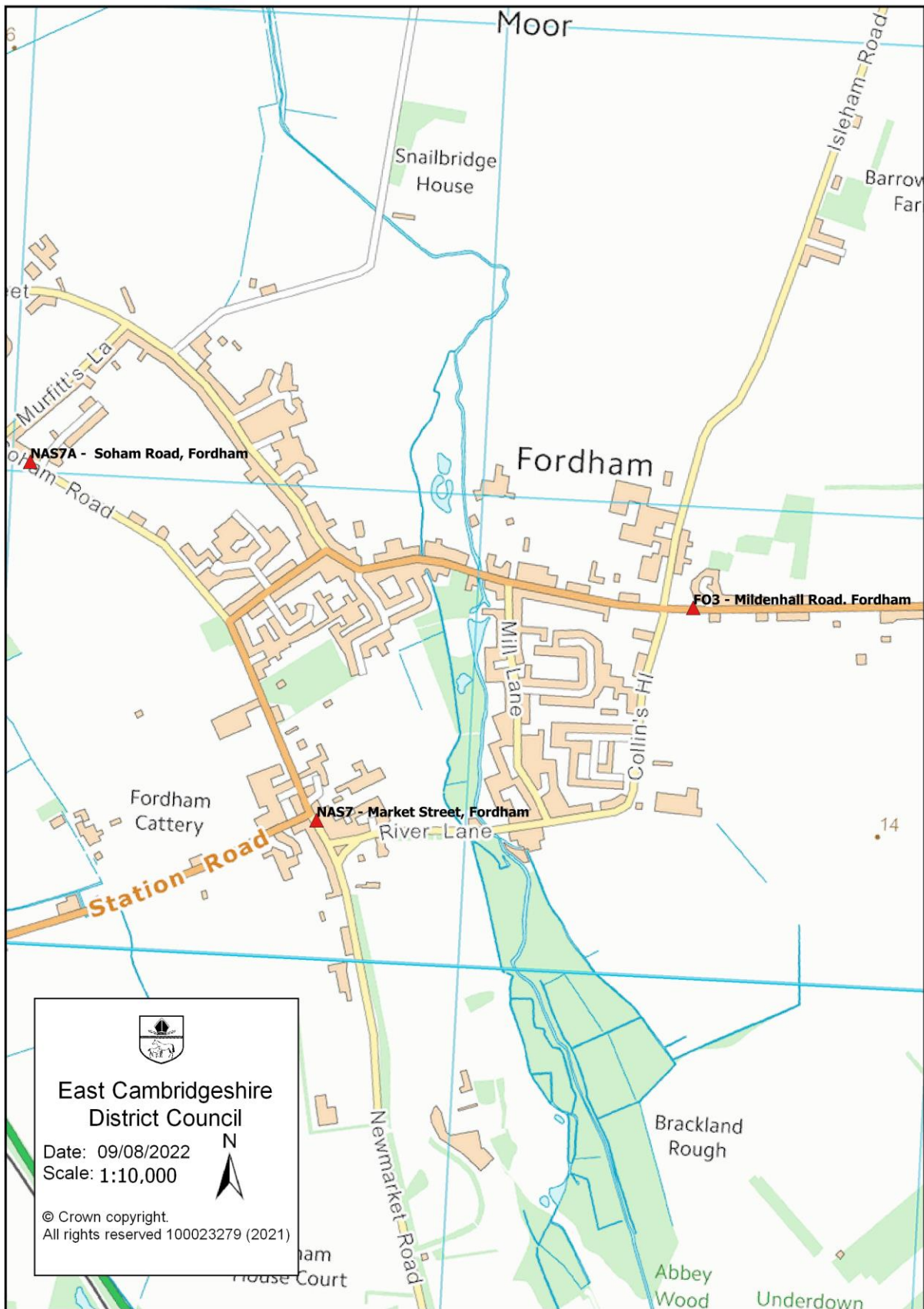


Figure D.5 – Map of Non-Automatic Monitoring Sites in Fordham

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
CPCA	Cambridgeshire and Peterborough Combined Authority
DEFRA	Department for Environment, Food and Rural Affairs
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

References

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