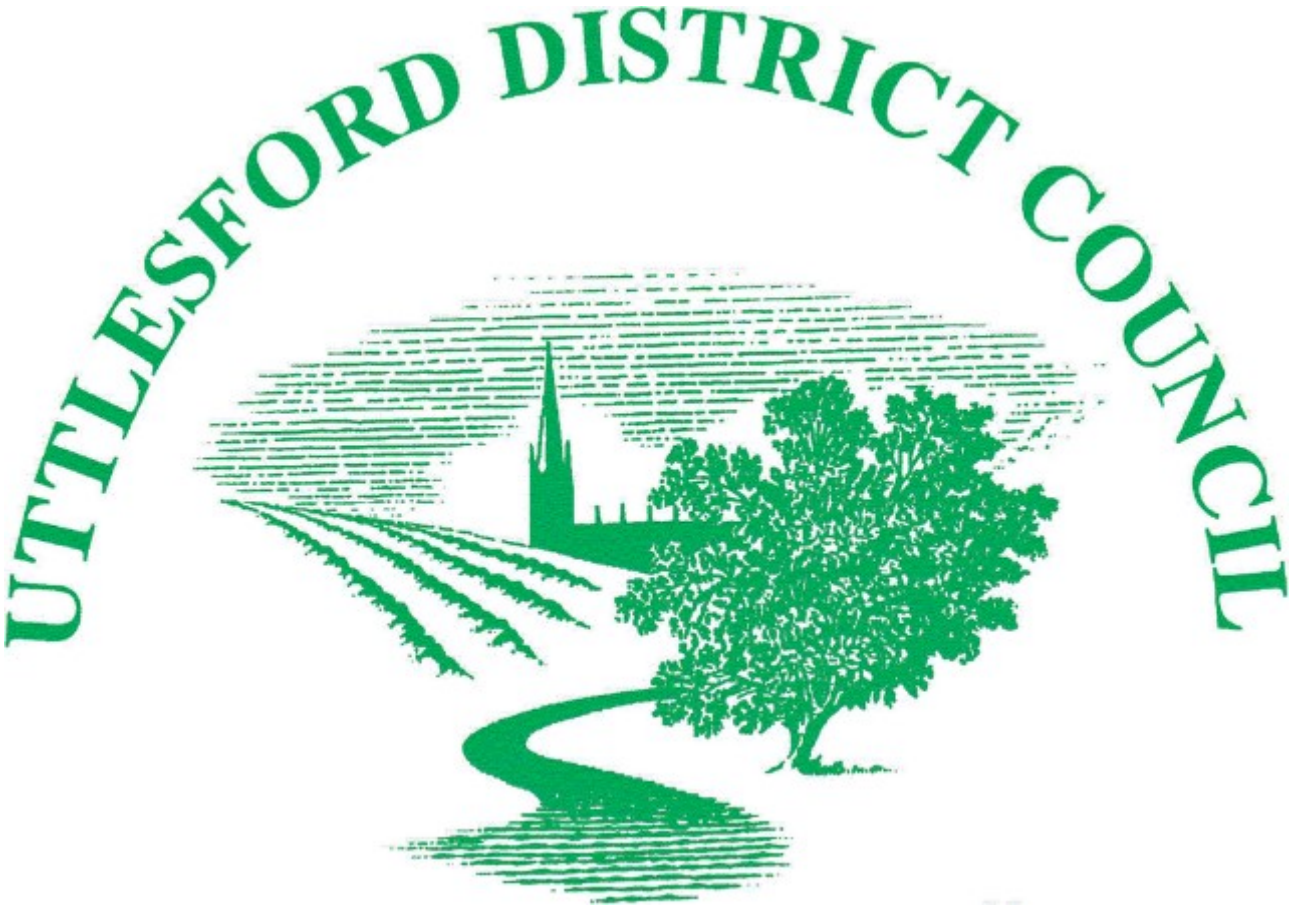


2023 Air Quality Annual Status Report (ASR)

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

Date: May 2023

Local Authority Officer	Marcus Watts
Department	Environmental Health
Address	Council Offices London Road Saffron Walden CB11 4ER
Telephone	01799 510510
E-mail	mwatts@uttlesford.gov.uk
Report Reference number	UTT/ASR2023
Date	16th May 2023
Written by	Tim Savage
Scientific Team Public Health & Protection Services Chelmsford City Council Duke Street Chelmsford Essex CM1 1JE	

Executive Summary: Air Quality in Our Area

The 2023 Annual Status Report is designed to provide the public with information relating to local air quality in Uttlesford, to fulfil Uttlesford District Council's statutory duty to review and assess air quality within its area, and to determine whether or not the air quality objectives are likely to be achieved.

In 2022, Uttlesford District Council measured **no** exceedances of the Air Quality Objectives.

Air Quality in Uttlesford

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Uttlesford is considered to be rural in nature and has the principal town of Saffron Walden as its administrative centre. Uttlesford is dissected by the M11 motorway and A120 trunk road which support Stansted International Airport in the south of the district.

Significant traffic congestion can occur during peak times within Saffron Walden causing high emissions of pollution such as nitrogen dioxide and particulate matter.

Traffic emissions are the most significant source of air pollution within the district. Within Saffron Walden, the historic layout of the town results in problems with traffic flow and congestion particularly at peak times.

Uttlesford District Council has one Air Quality Management Area (AQMA) within Saffron Walden town centre, declared for Nitrogen Dioxide (NO_2) annual mean exceedances. For the sixth year running, no exceedances have been measured.

It is Uttlesford District Council's intention to revoke the AQMA in 2023/24 and to develop the Saffron Walden Clean Air project.

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017
[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Air quality appraisal: damage cost guidance, January 2023
[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

Actions to Improve Air Quality

Air Quality Grant Funding

Uttlesford District Council has been awarded £517,000 by the Department for Environment, Food and Rural Affairs to support a series of projects to tackle air pollution and improve opportunities for sustainable travel. These projects form the Saffron Walden Clean Air Project.

Saffron Walden Clean Air Project

The clean air project will pilot green modes of transport and encourage active travel in the town, with the long-term aim of reducing car use for short in-town journeys, to help reduce road congestion and improve air quality. This will include piloting and encouraging take up of a range of shared transport schemes such as: e-bike hire, e-cargo bike hire, zero emissions deliveries, electric vehicle car club and 'try before you buy' bikes.

Saffron Walden Clean Air project is a DEFRA funded project aimed at creating a 'cleaner, healthier and greener' Saffron Walden for everyone to enjoy. Its aim it to to encourage active travel where possible so that people see walking or cycling as their first choice of transport for short in town journeys.

This project is being undertaken to improve air quality in Saffron Walden. The medieval road layout of the town means that high volumes of vehicles including HGVs come into proximity with high numbers of pedestrians. Elevated emissions are associated with high volumes of slow-moving traffic, stopping, and starting to negotiate junctions and pedestrian crossings, leading to higher levels of emissions than free flowing traffic.

Despite recent improvements in air quality, it is recognised that there is a need to do more to reduce emissions of nitrogen dioxide and particulate matter and make the town a healthier place to live.

This project is specific to Saffron Walden town only. However, if successful, it is hoped that some of the pilot zero emission shared transport schemes will be replicated across the district. The project provides a unique opportunity to test different methods of operation to see what will work best for the local community.

The Clean Air project contains three workstreams which have separate projects within them:

Awareness, Education and Behavioural Change

- School education project
- Wood burning particulate matter monitoring and engagement project
- Business engagement project
- Air pollution awareness and communication campaign

Clean Air Pilot Schemes

- Zero emissions delivery service
- Try Before You Buy scheme
- E-Cargo Bike community hire scheme
- Electric Vehicle car club
- E-Bike hire scheme
- Car Free Market Square

Traffic Management Schemes

- Saffron Walden Traffic Management strategy
- Town Centre Parking and Servicing strategy
- HGV Access and Routing strategy

More information about the Saffron Walden Clean Air Project can be found at the following link: https://www.uttlesford.gov.uk/saffron-walden-clean-air-project

School Air Quality Monitoring

In 2022, Uttlesford Council has undertaken NO2 air pollution monitoring using 36 diffusion tubes at schools across Uttlesford. Monitoring data can be found within Appendix A.

Measured concentrations around the schools were relatively low with the highest measured annual mean concentration of NO2 being 16.4µg/m^3.

Local Engagement and How to get Involved

Pollution Forecasts and Alerts

Uttlesford District Council is a member of the Essex Air Quality consortium. The @EssexAir twitter feed provides regional weekly air pollution forecasts.

Links to Defra recommended actions and health advice are provided when air pollution is likely to be moderate or higher. This will enable those with heart or lung conditions, or other breathing problems to make informed judgements about their levels of activity or exposure

Saffron Walden Clean Air Events

In 2023, the following were/are planned:

- Thursday 1st June - World Bike Day, Market Square, Saffron Walden, 10am to 3pm
- Saturday 10th June – ECO Fair, The Common, Saffron Walden
- Sunday 16th July – Free advanced led bike rides, Saffron Walden

More information about these events can be found at the following link:
https://www.uttlesford.gov.uk/saffron-walden-clean-air-project

As part of the Saffron Walden Clean Air project, the Council is also seeking to launch an EV car club within Saffron Walden. There will be offers and deals to enable residents to try using an EV car club car.

The link provided above provides more up to date information as all projects and initiatives develop.

Conclusions

Uttlesford District Council have concluded that:

- Diffusion tube monitoring at schools within Uttlesford identified good air quality and no air pollution hotspots
- There is a long term downwards trend of monitored NO_2 air pollution but in 2022 there were increases over 2021 which is generally against the regional trend
- There is an upwards trend of monitored particulate matter air pollution at the UTT3 London Road monitoring site
- No air quality exceedances have been identified in 2022
- No air quality exceedances have been identified for six years
- There are no new developments that will have a significant impact on air quality

Priorities

Uttlesford District Council will prioritise the following air quality measures:

- Revoke the Saffron Walden Air Quality Management Area
- Implement the Saffron Walden Clean Air Project
- Investigate the increasing particulate matter concentrations at the UTT3 London Road monitoring site

Local Responsibilities and Commitment

This ASR was prepared by Public Health and Protection Services of Chelmsford City Council on behalf of Uttlesford District Council.

This ASR has been approved by Marcus Watts Environmental Health Manager.

This ASR has been sent to the Essex County Council Director of Public Health.

If you have any comments on this ASR please send them to Uttlesford District Council at:

Environmentalhealth@uttlesford.gov.uk

Or by telephone on 01709 510510

Table of Contents

Figures

Tables

1 Local Air Quality Management

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

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

Air Quality Management Areas

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

A summary of AQMAs declared by Uttlesford District Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Uttlesford. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration (µg/m^3)	Level of Exceedance: Current Year (µg/m^3)	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Saffron Walden AQMA	Declared 01/08/2007 Amended 12/09/2012	NO2 Annual Mean	Circle of radius 1400m radius centred on Elm Grove in Saffron Walden Town Centre.	No	42.9	No Exceedance	6	Uttlesford District Council Air Quality Action Plan November 2017	https://www.uttlesford.gov.uk/media/7346/Air-Quality-Action-Plan-2017-2022/pdf/AQMA_Action_Plan_Nov_2017_pdfa.pdf?m=636988925812370000

☒ **Uttlesford District Council confirms the information on UK-Air regarding their AQMA is up to date**

☒ **Uttlesford District Council confirm that all current AQAPs have been submitted to Defra**

Progress and Impact of Measures to address Air Quality in Uttlesford District Council

Defra's appraisal of last year's ASR concluded that report was well structured, detailed, and provides the information specified in the Technical Guidance.

Uttlesford District Council have a number of ongoing measures to improve air quality in Uttlesford. These are detailed in Table 2.2 below.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	To revise planning policies which will ensure the impact on air quality in the AQMA is given adequate consideration and weight in the decision-making process.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2017	2023	Uttlesford District Council	Uttlesford District Council	NO	Funded	< £10k	Aborted	Low, but potential to mitigate against emission increases associated with future growth.	Policies contained in the Local Plan once adopted. Use of sec 106 funds to implement action plan	Policies have been included in the submitted Regulation 19 Local Plan. Cost: within existing resources.	Following the examination of the proposed Local Plan, it was withdrawn. The Council is working on a new Local Plan and this is due to be submitted for examination in the Autumn 2024
2	To produce a planning Technical Guidance document for air quality, to ensure the impacts of new development on the AQMA, new receptors in the AQMA, and the level of mitigation are fully considered in all applications.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2017	2025	Uttlesford District Council	Uttlesford District Council	NO	Funded	< £10k	Planning	Low, but potential to mitigate against emission increases associated with future growth.	Publicly available by December 2017	Technical Guidance document has been completed Cost within existing resources	Pending approval of new Local Plan. However, the service is pushing to link S106 funding against other policies, incl the SW neighbourhood plan
3	To work with ECC to facilitate the provision of new cycle/pedestrian routes and cycle storage, and promote the routes available.	Transport Planning and Infrastructure	Cycle network	2017	2024 and ongoing	Uttlesford District Council / Essex County Council	Uttlesford District Council / Essex County Council	NO	Funded		Planning	Low, dependant on reduction in number of vehicles on road network	Number of new routes provided, increase in no of storage facilities per annum and users of facilities year on year	Action now forms part of the work associated with the govt funded Saffron Walden Clean Air Initiative.	Outcomes dependent on the outcome of transportation studies inc LCWIP, priorities, funding & developer contributions, which the plan cannot timescale.
4	UDC to increase cycle storage on Council owned sites in Saffron Walden where practical to do so.	Transport Planning and Infrastructure	Cycle network	2017		Uttlesford District Council	Uttlesford District Council	NO				Low, dependant on reduction in number of vehicles on road network	Increase in no of storage facilities and users of facilities from baseline	To link in with the Travel plan. Engage with property services & apply for funding where appropriate where need has been identified. .	Measure on hold as the service is concentrating on wider cycling provision as part of the govt funded SW Clean Air Initiative

5	To assist ECC in working with local schools and businesses in the review and upgrading of existing travel plans or to assist individual schools or businesses to develop and promote plans	Promoting Travel Alternatives	School Travel Plans	2017		Uttlesford District Council / Essex County Council	Uttlesford District Council / Essex County Council	YES	Funded	As part of broader project delivery	Pending in 2023 following support from govt funding and ECC	Low, dependant on reduction in number of vehicles on road network	Number of new or upgraded TPs. Increase in walking or cycling to school or workplace from baseline	Cost within existing resources & supported by govt funding	Reliance on joint working with ECC and other stakeholders to develop new travel plans.
6	To support the extension of phone signal coverage and superfast broadband service to all parts of the district.	Promoting Travel Alternatives	Encourage / Facilitate home-working	2017		Uttlesford District Council / Essex County Council	Uttlesford District Council / Essex County Council	NO			TBC	Low, dependant on reduction in number of vehicles on road network	Number of businesses and homes enabled to access superfast broadband by 2019. Increase in no of people regularly working from home	UDC investment of £500k towards inclusion in Superfast Essex broadband procurement to be implemented by end of 2019. This has been delayed until December 2022	
7	To work with ECC Highways to develop a scheme of measures aimed at improving junction capacity within the AQMA identified to be necessary as part of the Local Plan once adopted.	Traffic Management	UTC, Congestion management, traffic reduction	2019		Essex County Council	Essex County Council	YES	Funded	Transportation study £70K	Measure superseded by the transportation studies as part of the SW Clean Air Initiative	Medium, dependant on reduced congestion	Junction capacity improvements at the four key junctions identified in the action plan. Reduction in queue lengths from identified baseline.	On going work. Studies and modelling pending. Some 106 funding available	Reliant on ECC work programme following approval of the Local Plan and developer contributions once commenced. Timescale beyond control of UDC. Developer contributions have been diverted to pedestrian safety issues & traffic calming on Debden Road
8	To work with ECC to assess whether changes to junction configurations and signal controls, control of parking measures on main routes through the town and access to the centre by HGVs which will demonstrably reduce congestion can	Traffic Management	UTC, Congestion management, traffic reduction	2017		Essex County Council	Essex County Council	YES	Funded	HGV routing strategy (£15K)	Measure superseded by the transportation studies as part of the SW Clean Air Initiative	Medium, dependant on reduced congestion	Improvements to junctions carried out, improved parking on main routes, restrictions to HGVs. Reduction in queue lengths	On going work. Studies and modelling pending	Reliant on ECC and North Essex Parking Partnership (NEEP) to be in agreement with any changes following the adoption of a strategy

	be identified and implemented ahead of adoption of the local plan														
9	To support targeted enforcement of parking restrictions where identified to be an issue, on main routes through the town	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2017		Uttlesford District Council	Uttlesford District Council	YES	Funded	£27K	Measure superseded by the transportation studies as part of the SW Clean Air Initiative	Low, dependant on reduced congestion	No of parking penalty notices issued on main routes	Planned work stream delayed and now form part of the govt funded projects. .	Reliant on ECC and North Essex Parking Partnership (NEEP) to be in agreement with any changes following the adoption of a strategy
10	To provide clear informative signage to Swan Meadow car park, new amenities, leisure centre, food stores, Audley End	Transport Planning and Infrastructure	Other	2017	2019	Uttlesford District Council	Uttlesford District Council	NO				Low, dependant on reduced congestion	No of new signs provided	Appropriate signage on approaches to facilities provided, to be kept under review as new development is delivered	Completed
11	To review UDC travel plan and review opportunities for a shared travel plan with partner organisations using UDC facilities	Promoting Travel Alternatives	Workplace Travel Planning	2017		Uttlesford District Council	Uttlesford District Council	NO				Low, dependant on reduced congestion	Revised UDC TP by end of 2017. Reduction in car travel to work as measured by survey &occupied car spaces, reduction in business mileage of 5% pa	Under review following changes arising from the Covid -19 pandemic. To link in with the Councils Climate Change Strategy. Cost within existing resources	
12	To pursue options to install renewable energy technologies at suitable sites within Saffron Walden,to review UDC fleet procurement and implement changes where identified as practicable, and likely emission reductions justify the capital expenditure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2017		Uttlesford District Council	Uttlesford District Council	NO				Medium	No kW renewable energy within SW, review of fuel usage and type, no of UDC LEVs	Meetings held with vehicle procurement to consider options for fleet procurement and conversion of existing fleet to low emission fuel, and cost benefit. Uttlesford Norsk partnership replaced 17 older vehicles with Euro 6 complaint fleet. This included 2x electric vehicles	Awaiting resources

13	To encourage ECC to procure bus services with integrated timetables, high quality facilities, and a frequent and reliable service linked to the rail service at Audley End. Information on Public Transport services to be readily available in UDC buildings and via the website.	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2017		Uttlesford District Council / Essex County Council	Uttlesford District Council / Essex County Council	NO				Low	No of new or improved services available, information available in UDC buildings. Increase in bus usage of 5%	No progress	Awaiting resources
14	To identify opportunities to raise public awareness of air quality issues through education initiatives and publicity campaigns	Public Information	Via leaflets	2017		Uttlesford District Council	Uttlesford District Council	YES	Funded	£53K	Measure superseded by the SW Clean Air Initiative	Low, dependant on behavioural changes	KPIs under review as the Council is currently procuring a service provider	Grant funding is allowing the Council to take a robust approach to behaviour change and awareness	Currently moving through procurement
15	To provide advice and raise awareness of car sharing and associated database software available to employers	Alternatives to private vehicle use	Car & lift sharing schemes	2017		Uttlesford District Council	Uttlesford District Council	NO			Measure superseded by the SW Clean Air Initiative	Low dependant on reduced congestion	No of new car sharing schemes set up, target one per annum. Reduction of 1-5% of private car commuter journeys	Under review as part of recent supported projects	Scheme uptake outside control of UDC. However, district wide promotion of schemes to take place on an annual basis as part of other awareness linked to measure 14.
16	To consider the provision of preferential charging for UDC controlled parking spaces for vehicles meeting low emission standards	Traffic Management	Emission based parking or permit charges	2017		Uttlesford District Council	Uttlesford District Council	NO			On going & now linked with the SW Clean Air Initiative	Low, dependant on raised uptake of LEVs	Review of charging policy	Under review	
17	To engage with the Uttlesford licensed operators with the aim of introducing emission controls for licensed taxis operating within the AQMA.	Promoting Low Emission Transport	Taxi Licensing conditions	2017	2019	Uttlesford District Council	Uttlesford District Council	NO				Low	Review of licensing policy	Upgraded licensed vehicle emissions policy.	Completed
18	To encourage ECC to set emission standards for	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2017		Essex County Council	Essex County Council	NO				Low	Review of contractual arrangements	No progress	Awaiting resources

	new and existing buses under contract operating within the AQMA														
19	To work with the operators of fleet vehicles within the town to facilitate the introduction of LEV's	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2018		Uttlesford District Council	Uttlesford District Council	NO			Measure superseded by the SW Clean Air Initiative - to include Elec car club and other emobility measures	Potentially medium, dependant on uptake of vehicles.	No of LEV fleet vehicles on town road network.	No progress	Reliance on engagement with fleet operators to achieve outcome.
20	Provide electric charging points on UDC owned parking spaces in the town where practical and economically feasible to do so, and encourage the provision of points at suitable privately owned sites	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018		Uttlesford District Council	Uttlesford District Council	NO				Potentially medium, dependant on uptake of vehicles.	No of points installed per annum, target 4	Ongoing. Charging points at the Common Car Park have been delivered. Currently there is a £100K bid, plus £40K match funding for additional car parks in place. 4 post at London Road are planned for August	Completed
21	To work with ECC on introducing delivery time restrictions to High Street SW	Freight and Delivery Management	Quiet & out of hours delivery	2017		Essex County Council	Essex County Council	NO			Measure superseded by the SW Clean Air Initiative	Low	Restrictions in place, reductions in HGV parking	No progress	Awaiting resources
22	To carry out additional monitoring of NO2 within Saffron Walden to inform basis for decision making.	Public Information	Other	2017	2019	Uttlesford District Council	Uttlesford District Council	NO				Low, provides evidence base for actions	Provision of localised data for incorporation into air quality modelling	Permanent Automatic monitoring station at London Road scheduled for 2019. Extension of diffusion tube sites to include co-location.	Completed

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

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

Uttlesford District Council monitors $PM_{2.5}$ concentrations at four locations across the district using one BAM 1020 reference monitor, one Osiris particle monitor and two Aeroqual AQY sensors. The table below compares the measured concentrations with Defra background mapping.

Table 2.3 – Uttlesford PM2.5 Monitoring Data

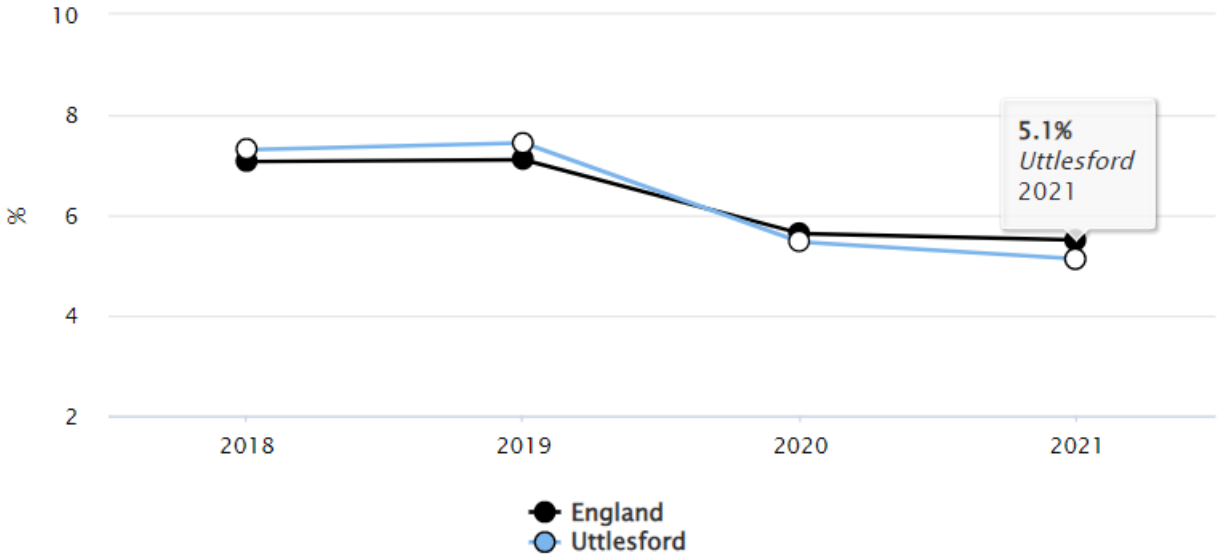
Monitoring Location	Easting	Northing	Monitoring Method	2022 PM2.5 Monitored Concentration (Annual Mean)	Change From 2021	Primary Local Source of $PM_{2.5}$
Thaxted Road, Saffron Walden	554357	238444	Nephelometer	5.4µg/m^3	-1.1µg/m^3	Road Traffic
London Road, Saffron Walden	553570	237908	Beta Attenuation	17.2µg/m^3	+2.8µg/m^3	Road Traffic
Hill House near Stansted Airport	555917	223377	Optical Particle Counter	Poor Data Quality No Results	N/A	Agriculture Aviation
Thaxted	561224	230889	Optical Particle Counter	5.6µg/m^3	-0.2µg/m^3	Road Traffic

The Osiris particle monitor and two Aeroqual sensors are providing air quality data for information only. Only data from the BAM reference monitor is formally reported in Appendix A.

The Thaxted Road, Hill House and Thaxted sensors all have recorded a reduction in measured PM2.5. The London Road sensor has measured a significant increase in PM2.5 which correlates with an increase in measured PM10 at the same location.

The Public Health Outcomes Framework indicator D01 – Fraction of mortality attributable to particulate ($PM_{2.5}$) air pollution which for 2021 gave a value of 5.1% which is down from 7.4% in 2019 and below the national (5.5%) and regional (5.5%) average.

Figure 2.1 – Public Health Framework Indicator D01 Fraction of all-cause adult mortality attributable to anthropogenic particulate air pollution



Uttlesford District Council is taking the following measures to address PM2.5:

- Use of Essex Air twitter to encourage the reporting of smoky vehicles through the DVSA reporting service. It is possible to report either heavy goods vehicles or public service vehicles (buses).
- Regular inspections of permitted industry where combustion and non-combustion processes could lead to anthropogenic emissions of PM2.5
- In 2023 there are planned pollution awareness and behaviour change projects. Specifically, to address PM2.5 there is a planned wood burning particular matter study.

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

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

No exceedances of the nitrogen dioxide air quality objectives have been identified and the long-term trend for monitored concentrations is downwards.

No exceedances of the PM10 have been identified however the long-term trend is slightly upwards.

Quality assurance and quality control information for the automatic analysers, diffusion tubes bias adjustments and other adjustments applied (e.g. annualisation and/or distance correction) are presented in Appendix C. Maps showing the location of the monitoring sites are presented in Appendix D.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Uttlesford District Council undertook automatic (continuous) monitoring with reference analysers at two sites during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Uttlesford District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 75 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

Individual Pollutants

3.1.3 Nitrogen Dioxide (NO2)

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.

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

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

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

In 2022, no exceedances of the air quality objectives have been measured. As no measured annual mean concentrations were greater than 60µg/m^3, it is unlikely that there has been an exceedance of the 1-hour mean objective

Figure 3.1 – Trends in Annual Mean NO2 Concentrations in Saffron Walden

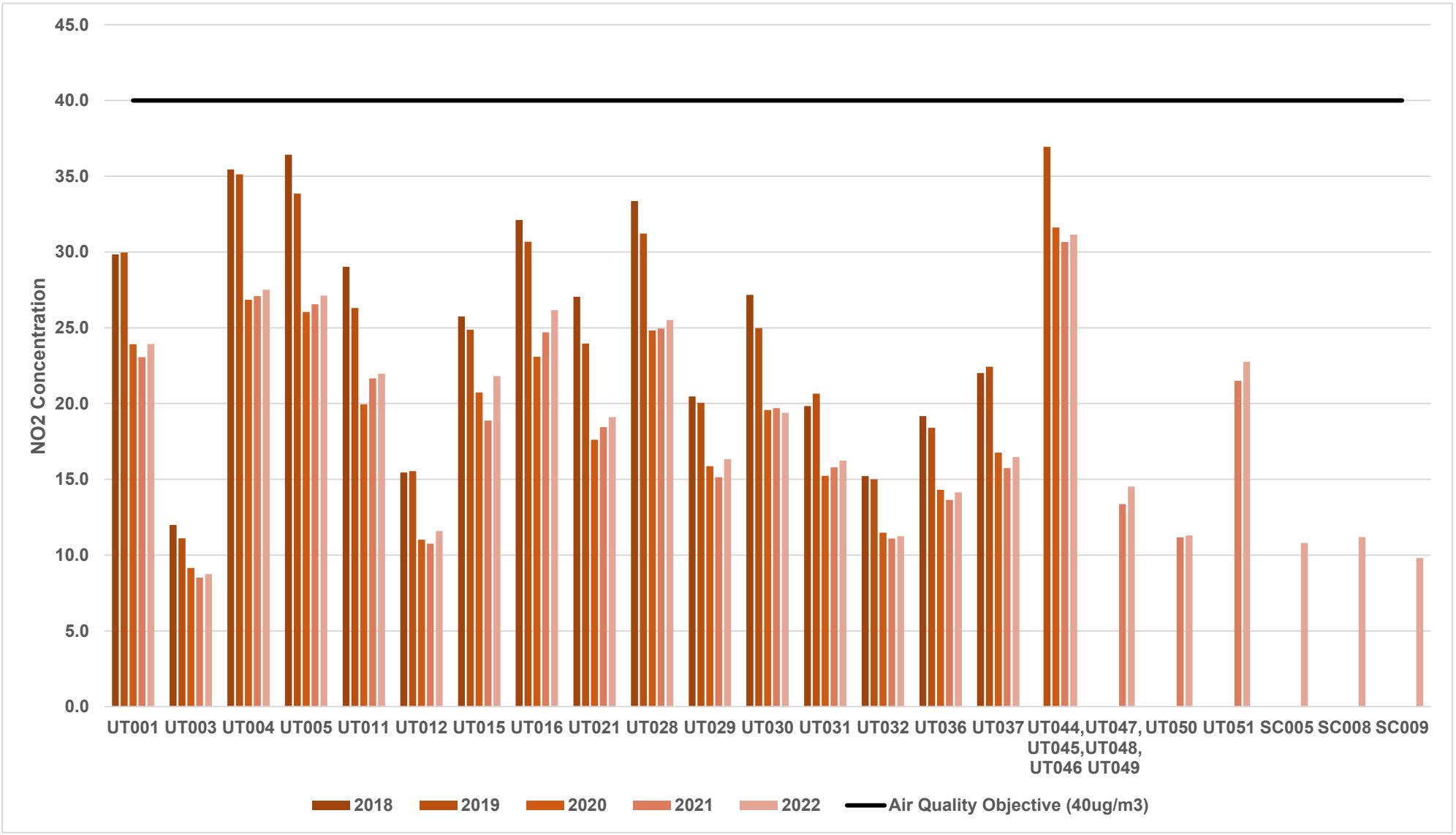
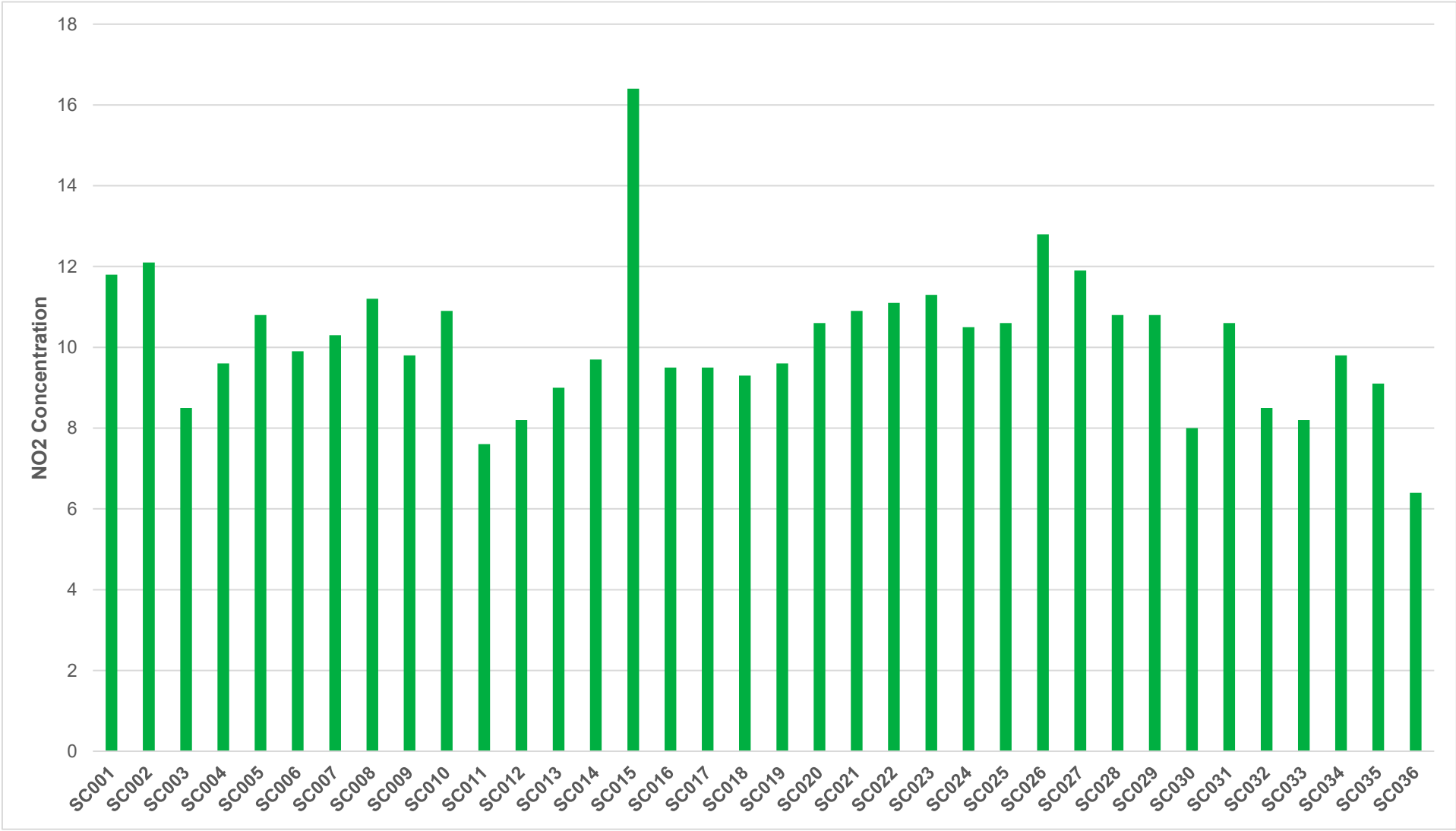


Figure 3.2 – Annual Mean NO2 Concentrations at School Monitoring Sites



Diffusion tube Site IDs are shown. School locations can be found in Appendix A

3.1.4 Particulate Matter (PM_{10})

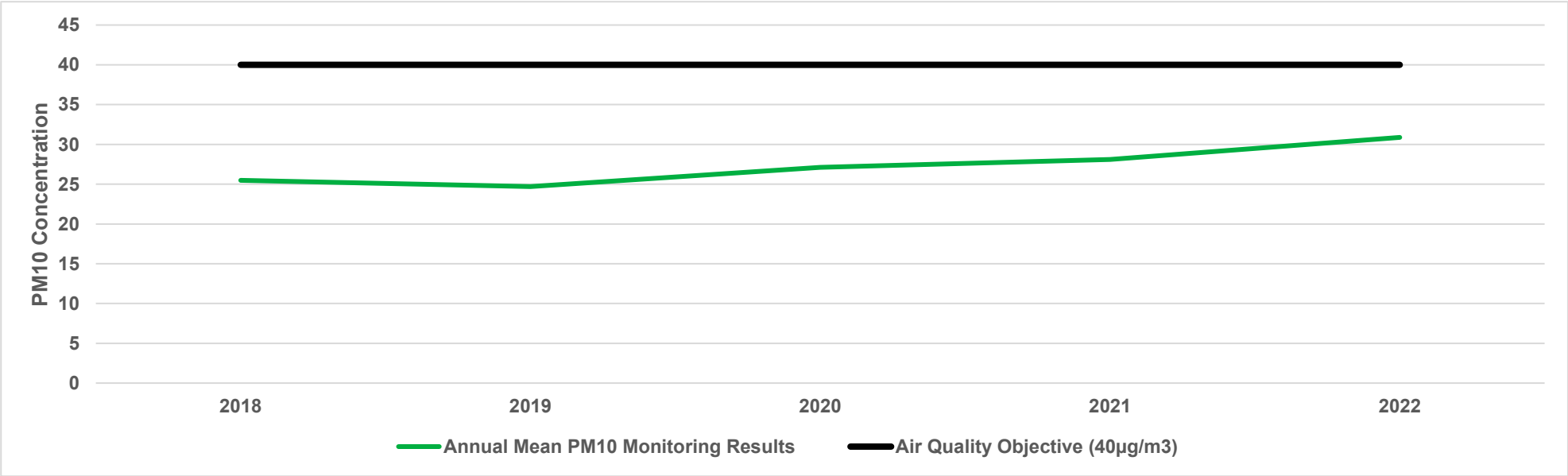
Error! Reference source not found. in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

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

The monitoring results identify a clear increase in measured PM_{10} at the UTT3 London Road monitoring station. This increase is for both annual mean and number of 24 hour means greater than 50µg/m^3.

No exceedances of the air quality objectives have been measured.

Figure 3.3 – Trends in Annual Mean PM10 Concentrations



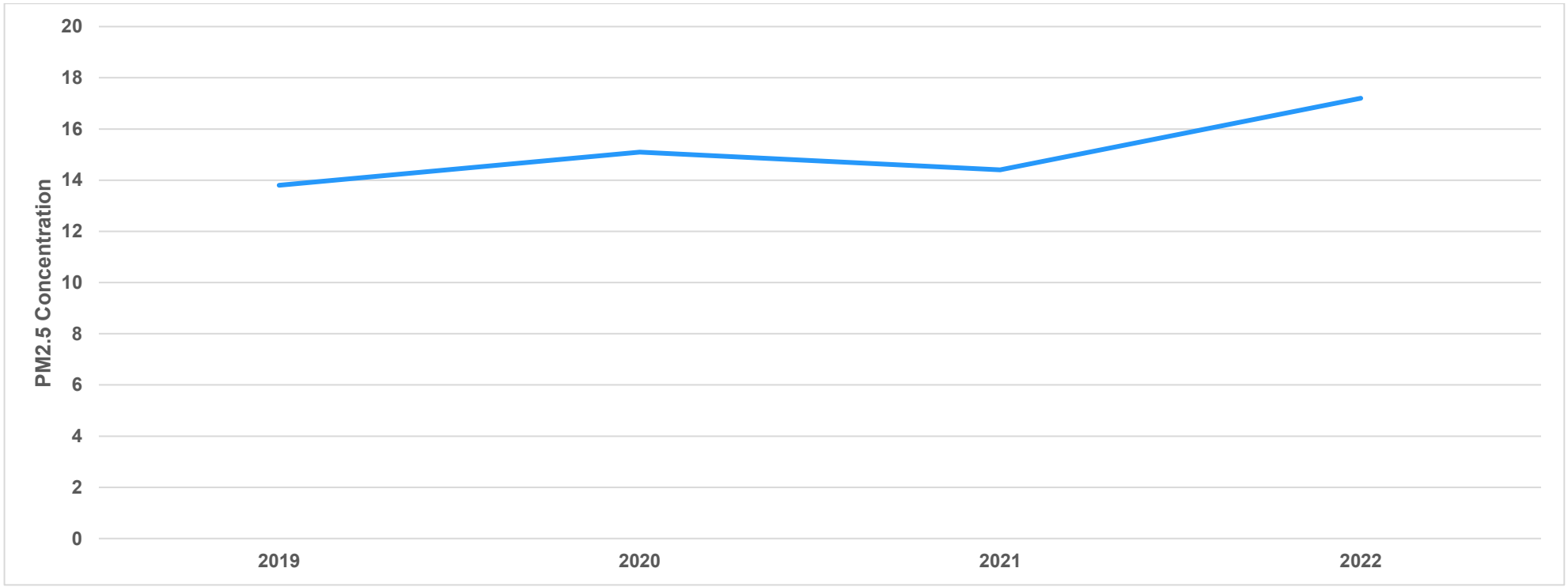
3.1.5 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) indicator is based.

Error! Reference source not found. in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

The monitoring results identify an increase in measured PM2.5 at the UTT3 London Road monitoring station between 2019 and 2022 and match the PM10 trend.

Figure 3.4 – Trends in Annual Mean PM2.5 Concentrations


20
18
16
14
12
10
8
6
4
2
0
PM2.5 Concentration
2019
2020
2021
2022

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
UTT2	Junction Thaxted Rd & Radwinter Rd, Saffron Walden	Roadside	554357	238444	NOx, NO, NO2	NO	Chemiluminescent	0	2	1
UTT3	London Road, Saffron Walden	Roadside	553570	237908	NOx, NO, NO2; PM10; PM2.5	NO	Chemiluminescent, BAM, BAM (with Smart Heater)	6	3	2.8

Notes:

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

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
UT001	Walden PO High Street	Urban Centre	553709	238417	NO2	Yes	15.0	1.5	No	2.0
UT003	Walden Gibson Gardens	Urban Background	553554	238218	NO2	Yes	5.1	1.5	No	2.0
UT004	Walden YHA	Kerbside	553598	238595	NO2	Yes	0.8	0.4	No	2.0

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)
UT005	Walden Thaxted Road	Kerbside	554336	238454	NO2	Yes	2.4	0.5	No	2.0
UT009	Burton End	Roadside	552403	223965	NO2	No	17.0	27.0	No	2.0
UT010	Newport M11	Kerbside	551246	233649	NO2	No	40.0	0.1	No	2.0
UT011	Walden 33 High Street	Urban Centre	553697	238452	NO2	Yes	0.0	2.7	No	2.0
UT012	Walden Town Hall	Urban Background	553879	238510	NO2	Yes	20.0	0.1	No	2.0
UT015	Walden 57 High Street	Roadside	553739	238317	NO2	Yes	0.0	4.0	No	2.0
UT016	Walden Radwinter Road	Roadside	554413	238474	NO2	Yes	8.0	1.6	No	2.0
UT017	Stortford Rd Lt Canfield	Roadside	560023	221444	NO2	No	14.0	2.5	No	2.0
UT018	Stansted 17 Cambridge Road	Roadside	551035	225199	NO2	No	3.0	1.5	No	2.0
UT019	Stansted Silver Street	Roadside	550950	225039	NO2	No	3.5	2.0	No	2.0
UT020	Stansted Grove Hill	Roadside	551535	225065	NO2	No	0.0	3.3	No	2.0
UT021	Walden 41 East Street	Roadside	554212	238436	NO2	Yes	0.0	2.0	No	2.0
UT024	Takeley Hill Hatfield Forest	Rural	554671	221010	NO2	No	N/A	118.0	No	2.0
UT028	Walden London Road	Roadside	553755	238092	NO2	Yes	0.8	2.0	No	2.0
UT029	Walden Debden Road	Roadside	553770	238076	NO2	Yes	0.5	0.5	No	2.0
UT030	Walden Friends School	Kerbside	553875	237764	NO2	Yes	10.0	0.5	No	2.0

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)
UT031	Walden Mount Pleasant Rd	Roadside	554178	237767	NO2	Yes	2.0	1.5	No	2.0
UT032	Walden Borough Lane	Roadside	553625	237856	NO2	Yes	0.0	7.0	No	2.0
UT033	Stansted Chapel Hill	Roadside	551377	224913	NO2	No	0.0	3.0	No	2.0
UT034	Takeley Four Ashes	Roadside	556101	221243	NO2	No	8.0	1.5	No	2.0
UT036	Walden Church Street	Urban Centre	553718	238530	NO2	Yes	0.0	1.0	No	2.0
UT037	Walden Castle Street	Kerbside	553923	238770	NO2	Yes	1.0	1.0	No	2.0
UT039	Newport Wicken Rd/ High Street	Roadside	552154	234033	NO2	No	0.0	1.2	No	2.0
UT040	Newport Wawel Cottage	Roadside	552113	234505	NO2	No	0.0	6.0	No	2.0
UT041	Newport Rose Cottage	Roadside	552091	233630	NO2	No	0.0	3.0	No	2.0
UT042	Newport Debden Road	Roadside	552152	233878	NO2	No	0.5	0.5	No	2.0
UT043	Newport Gaces Acre	Roadside	552135	234344	NO2	No	1.0	2.0	No	2.0
UT044, UT045, UT046	Thaxted Road Co-located 3	Roadside	554357	238443	NO2	Yes	0.0	2.0	Yes	2.0
UT047, UT048, UT049	London Road Co-located 3	Roadside	553570	237908	NO2	Yes	4.0	2.5	Yes	2.0
UT050	Walden South Road	Roadside	554103	238140	NO2	Yes	4.0	4.0	No	2.0

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)
UT051	Walden Church Street 2	Roadside	553700	238525	NO2	Yes	0.0	2.0	No	2.0
UT052	Great Easton PS	Roadside	561074	225855	NO2	No	3.0	7.0	No	2.0
UT053	Dunmow High Stile	Roadside	562329	221841	NO2	No	4.0	16.0	No	2.0
UT054	Thaxted Bardfield Road	Kerbside	561443	230778	NO2	No	N/A	1.0	No	2.0
UT055	Stansted Hampton Road	Roadside	551347	224227	NO2	No	2.0	2.0	No	2.0
UT056	Elsenham High Street	Kerbside	553765	226325	NO2	No	1.0	1.0	No	2.0
SC001	Joyce Frankland Academy	Kerbside	551954	234407	NO2	No	7.5	1.5	No	2.0
SC002	Newport Primary School	Urban Background	551745	233551	NO2	No	10.0	1.0	No	2.0
SC003	Rickling Green Primary School	Urban Background	551090	229882	NO2	No	3.0	2.0	No	2.0
SC004	Great Chesterford Primary Academy	Kerbside	550700	242786	NO2	No	5.0	1.0	No	2.0
SC005	St Thomas More Catholic Primary School	Kerbside	554206	237791	NO2	Yes	10.0	1.0	No	2.0
SC006	Saffron Walden County High School	Urban Background	553183	237809	NO2	No	3.0	3.0	No	2.0
SC007	Katherine Semar CP School	Kerbside	554274	236977	NO2	No	10.0	1.5	No	2.0
SC008	St Marys School	Kerbside	553827	238760	NO2	Yes	7.5	1.0	No	2.0
SC009	Dame Bradbury	Urban Background	554647	238768	NO2	Yes	2.0	25.0	No	2.0

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)
SC010	Ashdon Primary School	Kerbside	558738	242228	NO2	No	5.0	1.5	No	2.0
SC011	Radwinter School	Roadside	560712	237445	NO2	No	8.0	1.5	No	2.0
SC012	Great Sampford Primary School	Urban Background	564448	235428	NO2	No	3.0	8.0	No	2.0
SC013	Stebbing Primary School	Urban Background	566021	224425	NO2	No	10.0	4.0	No	2.0
SC014	Helena Romanes School	Urban Background	562157	223004	NO2	No	n/a	2.0	No	2.0
SC015	Great Dunmow Primary School	Urban Background	561768	221940	NO2	No	20.0	5.0	No	2.0
SC016	Flitch Green Academy School	Suburban	566539	220583	NO2	No	n/a	1.5	No	2.0
SC017	Felsted School	Kerbside	567888	220640	NO2	No	n/a	2.0	No	2.0
SC018	Felsted Primary School	Kerbside	568970	221065	NO2	No	5.0	2.0	No	2.0
SC019	Felsted Prep School	Suburban	567836	220381	NO2	No	n/a	2.0	No	2.0
SC020	Rodings Primary School	Roadside	559352	213692	NO2	No	10.0	2.0	No	2.0
SC021	Hatfield Heath Community Primary School	Urban Background	552205	215040	NO2	No	n/a	10.0	No	2.0
SC022	Little Hallingbury Primary School	Roadside	550247	217452	NO2	No	15.0	2.0	No	2.0
SC023	St Mary's Primary School	Kerbside	554805	216625	NO2	No	6.0	0.5	No	2.0
SC024	Takeley Primary School, Lt Canfield	Kerbside	557175	221325	NO2	No	5.0	1.5	No	2.0

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)
SC025	Takeley Primary School, Roseacres	Roadside	556364	221459	NO2	No	5.0	1.5	No	2.0
SC026	Forest Hall Academy	Suburban	551926	224040	NO2	No	n/a	10.0	No	2.0
SC027	Birchanger C Of E (VC) Primary School	Kerbside	550937	222982	NO2	No	10.0	1.5	No	2.0
SC028	Bentfield Primary School	Kerbside	550955	225769	NO2	No	8.0	1.5	No	2.0
SC029	Magna Carta Primary Academy	Kerbside	551258	225077	NO2	No	10.0	1.5	No	2.0
SC030	Wimbish Primary School	Kerbside	559308	235549	NO2	No	15.0	1.5	No	2.0
SC031	Debden Primary School	Kerbside	555570	233402	NO2	No	10.0	1.5	No	2.0
SC032	Henham And Ugley Primary School	Roadside	554726	228069	NO2	No	5.0	2.0	No	2.0
SC033	Farnham School	Kerbside	547732	224823	NO2	No	15.0	1.5	No	2.0
SC034	Manuden Primary School	Kerbside	549109	226575	NO2	No	12.0	2.0	No	2.0
SC035	Clavering Primary School	Roadside	547427	231562	NO2	No	15.0	4.0	No	2.0
SC036	Chrishall Holy Trinity & St Nicholas C Of E Primary School	Suburban	544494	239406	NO2	No	n/a	20.0	No	2.0

Notes:

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

(2) N/A if not applicable.

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
UTT2	554357	238444	Roadside	99.9	99.9	35.3	32.7	25	30.9	30.9
UTT3	553570	237908	Roadside	97.9	97.9	21.2	19.6	11.5	12.5	15.3

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

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

Notes:

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

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

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

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

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

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

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
UT001	553709	238417	Urban Centre	100.0	100.0	29.8	30.0	23.9	23.1	23.9
UT003	553554	238218	Urban Background	100.0	100.0	12.0	11.1	9.1	8.5	8.7
UT004	553598	238595	Kerbside	100.0	100.0	35.5	35.1	26.9	27.1	27.5
UT005	554336	238454	Kerbside	90.4	90.4	36.4	33.9	26.0	26.6	27.1
UT009	552403	223965	Roadside	100.0	100.0	33.6	30.1	23.5	23.6	24.4
UT010	551246	233649	Kerbside	100.0	100.0	22.2	21.5	16.3	14.7	15.3
UT011	553697	238452	Urban Centre	100.0	100.0	29.0	26.3	19.9	21.7	22.0
UT012	553879	238510	Urban Background	100.0	100.0	15.4	15.5	11.0	10.8	11.6
UT015	553739	238317	Roadside	100.0	100.0	25.8	24.9	20.7	18.9	21.8
UT016	554413	238474	Roadside	100.0	100.0	32.1	30.7	23.1	24.7	26.2
UT017	560023	221444	Roadside	90.4	90.4	14.9	14.6	10.1	10.4	10.3
UT018	551035	225199	Roadside	100.0	100.0	26.7	24.4	20.0	18.6	19.2
UT019	550950	225039	Roadside	100.0	100.0	35.0	31.9	22.8	24.8	25.6
UT020	551535	225065	Roadside	100.0	100.0	35.7	30.7	25.3	25.2	24.1
UT021	554212	238436	Roadside	100.0	100.0	27.0	24.0	17.6	18.4	19.1
UT024	554671	221010	Rural	92.3	92.3	13.1	11.4	9.2	8.3	9.2
UT028	553755	238092	Roadside	100.0	100.0	33.4	31.2	24.8	25.0	25.5
UT029	553770	238076	Roadside	82.7	82.7	20.5	20.1	15.9	15.1	16.3
UT030	553875	237764	Kerbside	82.7	82.7	27.2	25.0	19.6	19.7	19.4
UT031	554178	237767	Roadside	90.4	90.4	19.8	20.7	15.2	15.8	16.2
UT032	553625	237856	Roadside	100.0	100.0	15.2	15.0	11.5	11.1	11.2
UT033	551377	224913	Roadside	100.0	100.0	26.9	23.8	18.7	20.4	20.3
UT034	556101	221243	Roadside	90.4	90.4	26.2	24.6	18.0	18.1	18.8
UT036	553718	238530	Urban Centre	100.0	100.0	19.2	18.4	14.3	13.6	14.1
UT037	553923	238770	Kerbside	92.3	92.3	22.0	22.4	16.8	15.7	16.5
UT039	552154	234033	Roadside	100.0	100.0	30.1	27.1	20.7	21.8	21.2
UT040	552113	234505	Roadside	100.0	100.0	19.8	20.5	15.5	15.3	15.8
UT041	552091	233630	Roadside	100.0	100.0	18.7	19.2	15.5	15.5	15.6
UT042	552152	233878	Roadside	76.9	76.9	**N/A**	24.1	18.7	17.2	17.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2018	2019	2020	2021	2022
UT043	552135	234344	Roadside	92.3	92.3	N/A	22.9	16.4	18.3	17.9
UT044, UT045, UT046	554357	238443	Roadside	100.0	100.0	N/A	37.0	31.6	30.7	31.1
UT047, UT048, UT049	553570	237908	Roadside	100.0	100.0	N/A	N/A	N/A	13.4	14.5
UT050	554103	238140	Roadside	90.4	90.4	N/A	N/A	N/A	11.2	11.3
UT051	553700	238525	Roadside	82.7	82.7	N/A	N/A	N/A	21.5	22.8
UT052	561074	225855	Roadside	100.0	100.0	N/A	N/A	N/A	17.4	17.6
UT053	562329	221841	Roadside	90.4	90.4	N/A	N/A	N/A	12.1	12.7
UT054	561443	230778	Kerbside	90.4	90.4	N/A	N/A	N/A	14.8	15.3
UT055	551347	224227	Roadside	100.0	100.0	N/A	N/A	N/A	11.1	12.5
UT056	553765	226325	Kerbside	100.0	100.0	N/A	N/A	N/A	16.0	17.9
SC001	551954	234407	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	11.8
SC002	551745	233551	Urban Background	81.8	75.0	N/A	N/A	N/A	N/A	12.1
SC003	551090	229882	Urban Background	81.8	76.9	N/A	N/A	N/A	N/A	8.5
SC004	550700	242786	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	9.6
SC005	554206	237791	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	10.8
SC006	553183	237809	Urban Background	72.7	67.3	N/A	N/A	N/A	N/A	9.9
SC007	554274	236977	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	10.3
SC008	553827	238760	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	11.2
SC009	554647	238768	Urban Background	90.9	82.7	N/A	N/A	N/A	N/A	9.8
SC010	558738	242228	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	10.9
SC011	560712	237445	Roadside	100.0	92.3	N/A	N/A	N/A	N/A	7.6
SC012	564448	235428	Urban Background	100.0	92.3	N/A	N/A	N/A	N/A	8.2
SC013	566021	224425	Urban Background	90.9	82.7	N/A	N/A	N/A	N/A	9.0

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 2022 (%) [2]	2018	2019	2020	2021	2022
SC014	562157	223004	Urban Background	100.0	92.3	N/A	N/A	N/A	N/A	9.7
SC015	561768	221940	Urban Background	90.9	82.7	N/A	N/A	N/A	N/A	16.4
SC016	566539	220583	Suburban	72.7	65.4	N/A	N/A	N/A	N/A	9.5
SC017	567888	220640	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	9.5
SC018	568970	221065	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	9.3
SC019	567836	220381	Suburban	100.0	92.3	N/A	N/A	N/A	N/A	9.6
SC020	559352	213692	Roadside	90.9	84.6	N/A	N/A	N/A	N/A	10.6
SC021	552205	215040	Urban Background	90.9	82.7	N/A	N/A	N/A	N/A	10.9
SC022	550247	217452	Roadside	100.0	92.3	N/A	N/A	N/A	N/A	11.1
SC023	554805	216625	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	11.3
SC024	557175	221325	Kerbside	90.9	84.6	N/A	N/A	N/A	N/A	10.5
SC025	556364	221459	Roadside	90.9	84.6	N/A	N/A	N/A	N/A	10.6
SC026	551926	224040	Suburban	90.9	84.6	N/A	N/A	N/A	N/A	12.8
SC027	550937	222982	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	11.9
SC028	550955	225769	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	10.8
SC029	551258	225077	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	10.8
SC030	559308	235549	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	8.0
SC031	555570	233402	Kerbside	81.8	75.0	N/A	N/A	N/A	N/A	10.6
SC032	554726	228069	Roadside	100.0	92.3	N/A	N/A	N/A	N/A	8.5
SC033	547732	224823	Kerbside	90.9	82.7	N/A	N/A	N/A	N/A	8.2
SC034	549109	226575	Kerbside	100.0	92.3	N/A	N/A	N/A	N/A	9.8
SC035	547427	231562	Roadside	100.0	92.3	N/A	N/A	N/A	N/A	9.1
SC036	544494	239406	Suburban	100.0	92.3	N/A	N/A	N/A	N/A	6.4

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

☒ **Diffusion tube data has been bias adjusted**

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

Notes:

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

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

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

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
UTT2	554357	238444	Roadside	99.9	99.9	**0 (139.31)**	8	0	0	0
UTT3	553570	237908	Roadside	97.9	97.9	**0 (102.71)**	**0 (89.07)**	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
UTT3	553570	237908	Roadside	97.8	97.8	25.5	24.7	27.1	28.1	30.88

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

Notes:

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

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in **bold**.

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
UTT3	553570	237908	Roadside	97.8	97.8	8	16	8	13	32

Notes:

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

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

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

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

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

Table A.8 – Annual Mean PM2.5 Monitoring Results (µg/m3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
UTT3	553570	237908	Roadside	97.2	97.2	N/A	13.8	15.1	14.4	17.2

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

Notes:

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

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2022

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
UT001	553709	238417	41.5	32.2	29.4	25.0	27.0	27.6	27.2	28.0	32.8	33.2	37.6	36.2	31.5	23.9	-	
UT003	553554	238218	15.6	13.5	19.3	9.4	7.6	6.2	6.4	7.7	8.9	11.1	11.9	20.4	11.5	8.7	-	
UT004	553598	238595	46.8	39.3	38.1	27.2	35.9	33.8	33.5	31.2	33.2	38.7	34.6	42.2	36.2	27.5	-	
UT005	554336	238454	53.0	35.1	39.7	33.4	32.9	30.4	34.6	37.1	36.3	29.9	30.3	Missing	35.7	27.1	-	
UT009	552403	223965	44.4	33.4	31.8	31.6	28.8	27.6	25.5	31.1	31.1	32.3	30.3	36.8	32.1	24.4	-	
UT010	551246	233649	26.1	25.8	22.4	15.3	18.8	16.6	16.5	16.1	18.2	23.3	19.9	23.3	20.2	15.3	-	
UT011	553697	238452	38.8	31.1	29.6	24.6	26.4	25.1	25.1	24.6	29.7	28.0	30.2	33.6	28.9	22.0	-	
UT012	553879	238510	20.5	15.1	21.4	11.8	10.9	10.0	10.3	11.5	12.2	15.9	20.0	23.3	15.2	11.6	-	
UT015	553739	238317	35.6	28.6	26.5	19.7	25.3	25.6	25.7	23.9	27.3	0.5	72.2	33.6	28.7	21.8	-	
UT016	554413	238474	44.7	39.5	42.2	27.0	30.4	32.3	33.6	29.8	32.4	32.8	32.1	36.4	34.4	26.2	-	
UT017	560023	221444	24.8	14.4	13.3	Missing	10.8	8.8	11.3	12.6	13.9	8.8	9.1	21.6	13.6	10.3	-	
UT018	551035	225199	36.4	25.2	29.4	22.6	19.4	20.1	19.8	22.4	21.8	26.2	25.7	34.1	25.3	19.2	-	
UT019	550950	225039	50.9	33.3	35.9	31.8	29.9	29.5	31.1	31.5	32.7	32.9	28.7	36.4	33.7	25.6	-	
UT020	551535	225065	33.2	28.1	40.4	27.4	30.5	33.3	29.5	31.1	29.8	34.5	30.0	33.4	31.8	24.1	-	
UT021	554212	238436	36.9	21.4	30.4	23.6	20.0	19.4	21.7	22.9	25.5	22.2	19.1	38.5	25.1	19.1	-	
UT024	554671	221010	18.6	Missing	16.1	9.5	8.2	9.5	9.9	10.3	10.6	11.4	10.1	18.8	12.1	9.2	-	
UT028	553755	238092	48.8	38.3	33.3	30.4	32.3	29.3	28.9	28.5	32.8	33.3	30.1	36.9	33.6	25.5	-	
UT029	553770	238076	31.9	20.3	27.4	15.8	17.4	18.9	19.1	18.5	22.5	23.0	Missing	Missing	21.5	16.3	-	
UT030	553875	237764	34.7	22.7	33.6	25.1	21.4	20.2	22.5	25.8	Missing	Missing	22.2	26.8	25.5	19.4	-	
UT031	554178	237767	32.3	22.2	27.2	16.9	17.4	16.9	17.5	17.3	18.9	Missing	21.1	27.2	21.4	16.2	-	
UT032	553625	237856	23.7	16.8	17.5	12.4	11.4	9.4	9.5	10.7	12.7	12.8	17.8	22.8	14.8	11.2	-	
UT033	551377	224913	35.7	25.2	36.0	26.8	24.2	21.1	22.6	25.7	26.0	19.2	25.4	31.9	26.7	20.3	-	
UT034	556101	221243	37.8	26.1	31.9	20.0	21.0	18.3	21.4	20.5	24.4	25.6	25.1	Missing	24.7	18.8	-	
UT036	553718	238530	28.7	20.8	19.8	13.4	15.7	15.5	13.5	13.6	17.7	20.2	16.3	27.9	18.6	14.1	-	
UT037	553923	238770	33.1	Missing	27.7	16.0	14.9	15.8	15.7	14.9	19.3	22.3	29.5	29.2	21.7	16.5	-	
UT039	552154	234033	40.4	26.3	33.7	27.2	21.9	21.6	23.3	23.2	29.2	23.6	27.2	36.9	27.9	21.2	-	
UT040	552113	234505	28.3	22.2	20.3	17.0	19.4	17.2	17.1	17.6	21.1	20.3	21.5	27.4	20.8	15.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
UT041	552091	233630	31.9	20.3	25.9	17.9	15.7	14.8	13.9	17.6	21.4	20.8	15.0	30.7	20.5	15.6	-	
UT042	552152	233878	Missing	25.5	25.8	17.6	21.2	21.2	18.7	19.1	Missing	27.5	Missing	30.7	23.0	17.5	-	
UT043	552135	234344	Missing	22.7	34.0	22.2	17.3	14.1	19.8	18.9	24.8	24.3	26.6	34.1	23.5	17.9	-	
UT044	554357	238443	51.6	41.4	50.3	34.3	40.8	39.0	42.9	40.9	41.5	40.0	31.6	43.0	-	-	-	Triplicate Site with UT044, UT045 and UT046 - Annual data provided for UT046 only
UT045	554357	238443	44.7	39.2	46.2	35.0	39.1	37.8	40.3	39.8	40.3	39.7	37.2	41.5	-	-	-	Triplicate Site with UT044, UT045 and UT046 - Annual data provided for UT046 only
UT046	554357	238443	53.0	40.9	50.4	35.4	41.2	40.7	42.0	41.0	42.2	41.1	32.0	37.0	41.0	31.1	-	Triplicate Site with UT044, UT045 and UT046 - Annual data provided for UT046 only
UT047	553570	237908	28.3	19.1	29.7	15.5	12.9	12.5	12.1	14.3	15.9	21.3	18.4	28.6	-	-	-	Triplicate Site with UT047, UT048 and UT049 - Annual data provided for UT049 only
UT048	553570	237908	29.9	20.1	30.8	14.8	13.1	12.6	12.5	15.4	16.9	15.9	24.5	26.6	-	-	-	Triplicate Site with UT047, UT048 and UT049 - Annual data provided for UT049 only
UT049	553570	237908	30.4	18.9	26.8	14.7	13.4	11.9	12.6	14.6	16.5	20.4	18.4	27.5	19.1	14.5	-	Triplicate Site with UT047, UT048 and UT049 - Annual data provided for UT049 only
UT050	554103	238140	24.4	16.3	19.4	Missing	9.9	9.2	9.1	9.5	13.7	14.0	12.7	25.3	14.9	11.3	-	
UT051	553700	238525	40.3	Missing	32.1	22.4	24.3	27.5	25.1	22.5	31.0	Missing	39.2	35.0	29.9	22.8	-	
UT052	561074	225855	39.4	26.4	26.3	18.4	19.4	18.6	18.1	17.7	19.5	23.9	20.8	29.9	23.2	17.6	-	
UT053	562329	221841	30.0	17.7	20.5	12.2	Missing	10.6	9.8	10.3	14.0	18.5	14.7	24.8	16.6	12.7	-	
UT054	561443	230778	30.9	21.8	25.0	Missing	16.8	14.3	14.6	14.9	16.2	20.8	21.4	24.1	20.1	15.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
UT055	551347	224227	25.8	16.5	22.2	12.3	11.6	10.5	10.4	12.2	14.0	17.5	19.6	25.5	16.5	12.5	-	
UT056	553765	226325	36.0	23.0	27.3	17.7	18.7	17.7	18.0	18.6	23.5	26.6	24.3	31.8	23.6	17.9	-	
SC001	551954	234407	No Tubes Out	18.4	19.5	13.2	7.1	14.4	12.1	12.3	15.2	18.0	16.6	24.4	15.6	11.8	-	
SC002	551745	233551	No Tubes Out	Missing	19.2	Missing	12.7	11.9	9.3	12.8	15.0	19.7	18.8	23.9	15.9	12.1	-	
SC003	551090	229882	No Tubes Out	Missing	14.6	8.0	8.4	Missing	7.5	8.9	9.6	11.9	13.0	18.8	11.2	8.5	-	
SC004	550700	242786	No Tubes Out	14.3	16.9	10.5	7.3	Missing	8.3	8.7	9.1	12.3	15.3	23.7	12.6	9.6	-	
SC005	554206	237791	No Tubes Out	18.5	18.6	12.2	11.3	10.1	11.0	10.3	13.1	14.7	12.6	23.9	14.2	10.8	-	
SC006	553183	237809	No Tubes Out	Missing	18.2	11.4	9.6	Missing	8.2	8.4	10.5	Missing	13.8	24.3	13.1	9.9	-	
SC007	554274	236977	No Tubes Out	Missing	16.7	10.5	9.6	8.3	8.6	15.6	10.8	12.4	18.7	24.5	13.6	10.3	-	
SC008	553827	238760	No Tubes Out	19.0	19.1	9.2	11.8	9.3	10.1	9.6	12.2	16.5	20.8	24.2	14.7	11.2	-	
SC009	554647	238768	No Tubes Out	17.2	15.5	8.6	10.0	9.6	8.3	8.1	9.5	Missing	19.3	22.9	12.9	9.8	-	
SC010	558738	242228	No Tubes Out	19.2	20.3	12.4	11.8	10.0	10.2	11.2	13.4	14.0	Missing	21.4	14.4	10.9	-	
SC011	560712	237445	No Tubes Out	13.5	13.7	7.5	7.9	6.2	6.7	7.4	9.4	12.1	10.0	16.2	10.1	7.6	-	
SC012	564448	235428	No Tubes Out	13.2	19.0	8.4	8.9	7.0	6.9	8.0	7.7	10.9	11.4	17.3	10.8	8.2	-	
SC013	566021	224425	No Tubes Out	16.2	15.7	8.8	9.5	7.5	16.5	7.6	10.1	12.2	14.4	Missing	11.9	9.0	-	
SC014	562157	223004	No Tubes Out	16.6	18.7	8.8	11.1	9.6	8.9	8.1	9.8	13.7	17.7	17.3	12.8	9.7	-	
SC015	561768	221940	No Tubes Out	23.2	31.5	16.7	Missing	16.2	18.8	17.5	16.8	26.3	24.4	24.7	21.6	16.4	-	
SC016	566539	220583	No Tubes Out	Missing	19.1	Missing	Missing	7.2	8.4	9.3	11.3	11.8	13.8	20.4	12.7	9.5	-	
SC017	567888	220640	No Tubes Out	Missing	21.1	10.2	10.2	8.1	8.0	8.5	8.9	14.7	12.8	21.9	12.4	9.5	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SC018	568970	221065	No Tubes Out	Missing	20.5	9.7	10.0	8.6	9.0	9.3	10.1	13.2	14.2	17.9	12.3	9.3	-	
SC019	567836	220381	No Tubes Out	15.8	21.9	9.6	10.3	8.2	7.7	8.9	9.3	13.3	13.4	20.0	12.6	9.6	-	
SC020	559352	213692	No Tubes Out	Missing	22.1	12.2	11.1	7.6	9.8	11.0	11.8	16.2	17.0	21.3	14.0	10.6	-	
SC021	552205	215040	No Tubes Out	17.3	18.8	11.8	13.0	10.8	10.3	11.6	13.3	17.9	19.2	Missing	14.4	10.9	-	
SC022	550247	217452	No Tubes Out	18.9	18.4	11.7	11.1	10.0	9.2	9.5	12.2	17.3	18.9	23.3	14.6	11.1	-	
SC023	554805	216625	No Tubes Out	18.6	19.0	13.1	14.5	Missing	11.0	12.2	12.4	16.5	9.0	22.3	14.9	11.3	-	
SC024	557175	221325	No Tubes Out	Missing	17.3	11.1	10.5	8.9	10.9	10.3	12.2	16.3	17.7	23.6	13.9	10.5	-	
SC025	556364	221459	No Tubes Out	Missing	17.8	11.1	11.1	9.6	10.3	11.4	12.7	15.9	15.3	24.8	14.0	10.6	-	
SC026	551926	224040	No Tubes Out	Missing	22.7	14.0	13.5	13.3	13.4	14.9	16.2	19.1	17.6	23.6	16.8	12.8	-	
SC027	550937	222982	No Tubes Out	17.7	25.1	11.6	12.2	10.7	10.6	10.8	12.3	17.7	18.2	25.5	15.7	11.9	-	
SC028	550955	225769	No Tubes Out	16.1	22.9	11.8	11.7	9.8	5.0	12.0	11.3	15.9	16.3	23.9	14.2	10.8	-	
SC029	551258	225077	No Tubes Out	18.8	17.0	11.3	10.9	10.1	5.1	11.5	12.7	16.5	18.7	23.3	14.2	10.8	-	
SC030	559308	235549	No Tubes Out	15.4	15.4	8.0	8.3	7.0	3.5	6.4	8.2	12.0	14.0	17.1	10.5	8.0	-	
SC031	555570	233402	No Tubes Out	Missing	20.3	12.0	Missing	8.1	4.8	11.5	14.2	14.0	17.1	23.4	13.9	10.6	-	
SC032	554726	228069	No Tubes Out	13.9	15.2	8.5	8.8	8.1	3.9	7.2	9.3	14.3	16.1	18.2	11.2	8.5	-	
SC033	547732	224823	No Tubes Out	12.9	16.4	7.9	Missing	6.8	3.5	8.3	9.9	13.6	13.2	16.0	10.9	8.2	-	
SC034	549109	226575	No Tubes Out	15.0	18.7	11.3	10.1	6.2	5.2	10.5	12.2	15.1	17.6	19.9	12.9	9.8	-	
SC035	547427	231562	No Tubes Out	17.4	16.9	9.6	9.5	7.9	4.1	8.9	11.4	13.6	11.8	20.8	12.0	9.1	-	
SC036	544494	239406	No Tubes Out	7.7	14.3	6.3	6.4	5.1	2.8	6.2	7.3	9.5	9.5	16.9	8.4	6.4	-	

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

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

☒ **National bias adjustment factor used**

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

☒ **Uttlesford District Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Uttlesford District Council During 2022

Uttlesford District Council has not identified any new sources relating to air quality within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

- Uttlesford District Council undertook monitoring at 75 sites in 2022.
- Uttlesford District Council adheres with the Diffusion Tube Monitoring Calendar
- The diffusion tubes were supplied by Socotec (UKAS Testing Laboratory number 1015) with a preparation method of 50% triethanolamine (TEA) in Acetone.
- The AIR NO_2 proficiency testing scheme found that the laboratory achieved the following percentage of results determined as satisfactory for 2022:

Diffusion Tube Annualisation

Table C.1 – Annualisation Summary (concentrations presented in µg/m3)

Site ID	Annualisation Factor Chignal St James	Annualisation Factor Rochester Stoke	Annualisation Factor St Osyth	Annualisation Factor Wicken Fen>	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m3)	Annualised Data Simple Annual Mean (µg/m3)
SC006	1.0022	1.0069	0.9915	0.9967	0.9994	13.1	13.0
SC016	0.9284	1.0449	0.9964	0.9881	0.9895	12.7	12.5

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Uttlesford District Council have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data to maintain consistency with other Councils in Essex and to exclude issues where poor data capture from the automatic analysers may affect the overall bias adjustment figure.

A summary of bias adjustment factors used by Uttlesford District Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	Diffusion Tube	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	Socotec 50% TEA in Acetone	03/23	0.76
2021	National	Socotec 50% TEA in Acetone	03/22	0.78
2020	National	Socotec 50% TEA in Acetone	03/21	0.77
2019	National	Gradko 20% TEA in Water	03/20	0.93
2018	National	Gradko 20% TEA in Water	03/19	0.92

NO2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website.

No diffusion tube NO_2 monitoring locations within Uttlesford required distance correction during 2023.

QA/QC of Automatic Monitoring

Uttlesford District Council operates two automatic monitoring sites measuring NO_2, $PM_{2.5}$ and PM_{10}. Data from these sites is collected by a contractor.

Daily data validation checks are made to ensure the analysers are working correctly and to identify any abnormal readings that may occur. Monitoring data is forwarded to the Council.

The automatic monitoring station equipment is serviced every six months by a contractor who also carries out maintenance callouts when faults are identified.

The nitrogen dioxide analysers are calibrated monthly with a certified reference gas. Particulate monitors have their filter tapes changed every two months. All automatic monitoring sites are colocated with triplicate NO_2 diffusion tubes.

Data ratification for the analyser contains following processes;

- Applying the scaling factors derived from calibrations, maintenance visits and servicing
- Checking for equipment drift with adjustments made where detected
- Comparison with datasets from other appropriate Essex Air monitoring sites
- Checking for and deletion of erroneous data that can be linked to analyser fault or failure.

Automatic Monitoring Annualisation

The automatic monitoring sites within Uttlesford recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

NO_2 Fall-off with Distance from the Road

The automatic monitoring sites within Uttlesford did not require distance correction during 2021.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Sites: Saffron Walden AQMA

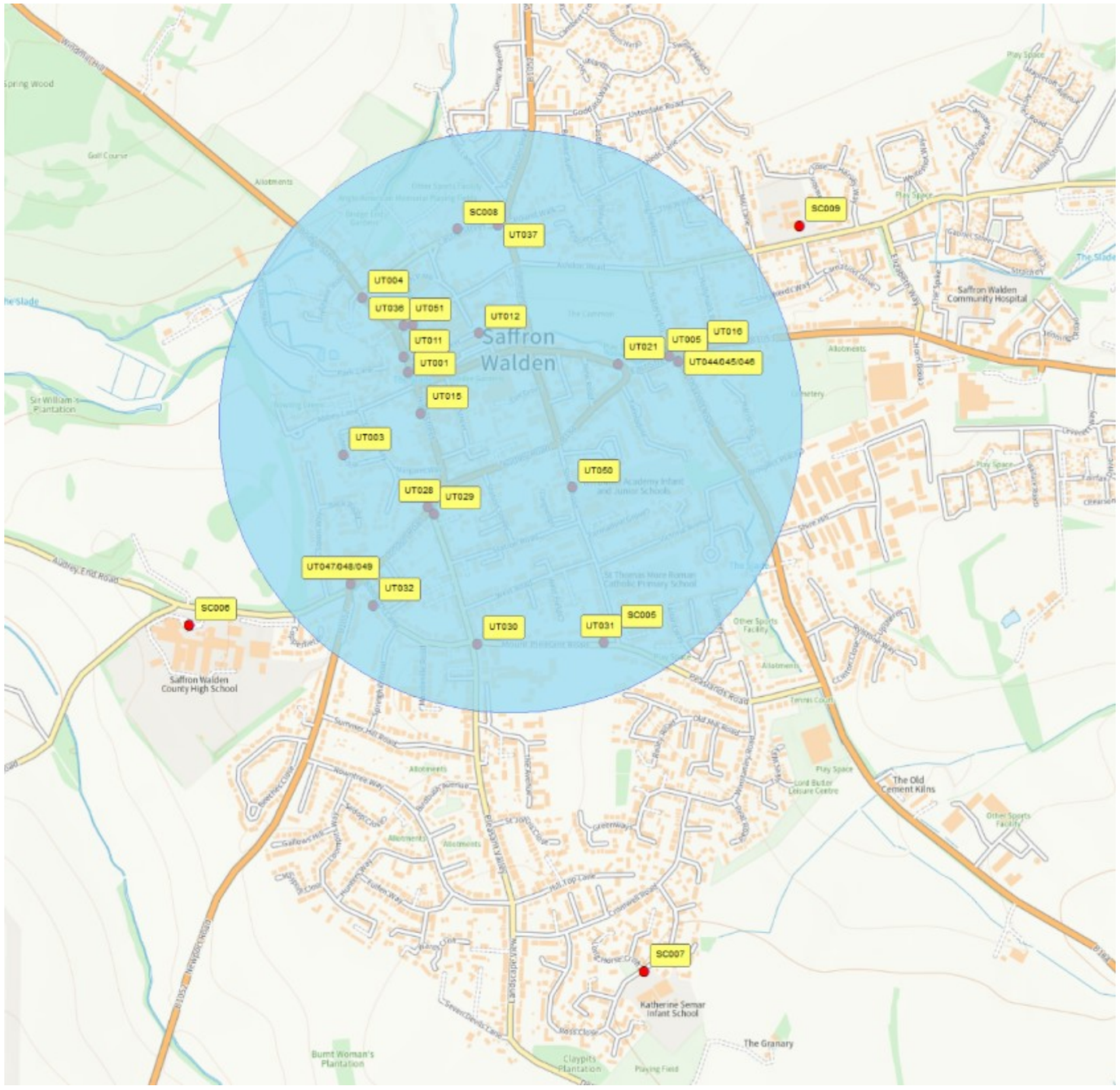


Figure D.2 – Map of Non-Automatic Monitoring Sites: Takeley

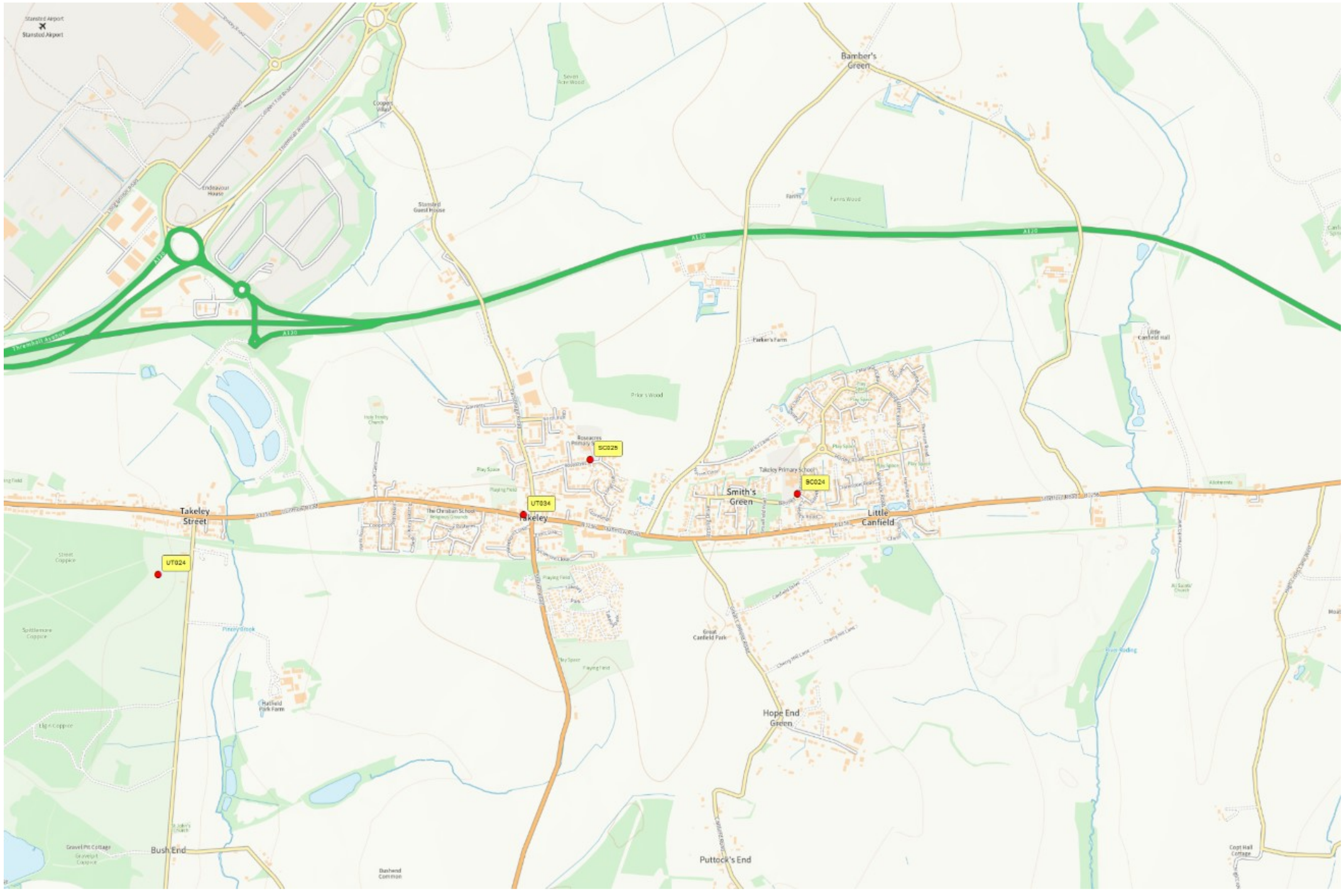


Figure D.3 – Map of Non-Automatic Monitoring Sites: Thaxted

Figure D.4 – Map of Non-Automatic Monitoring Sites: Stansted & Elsenham

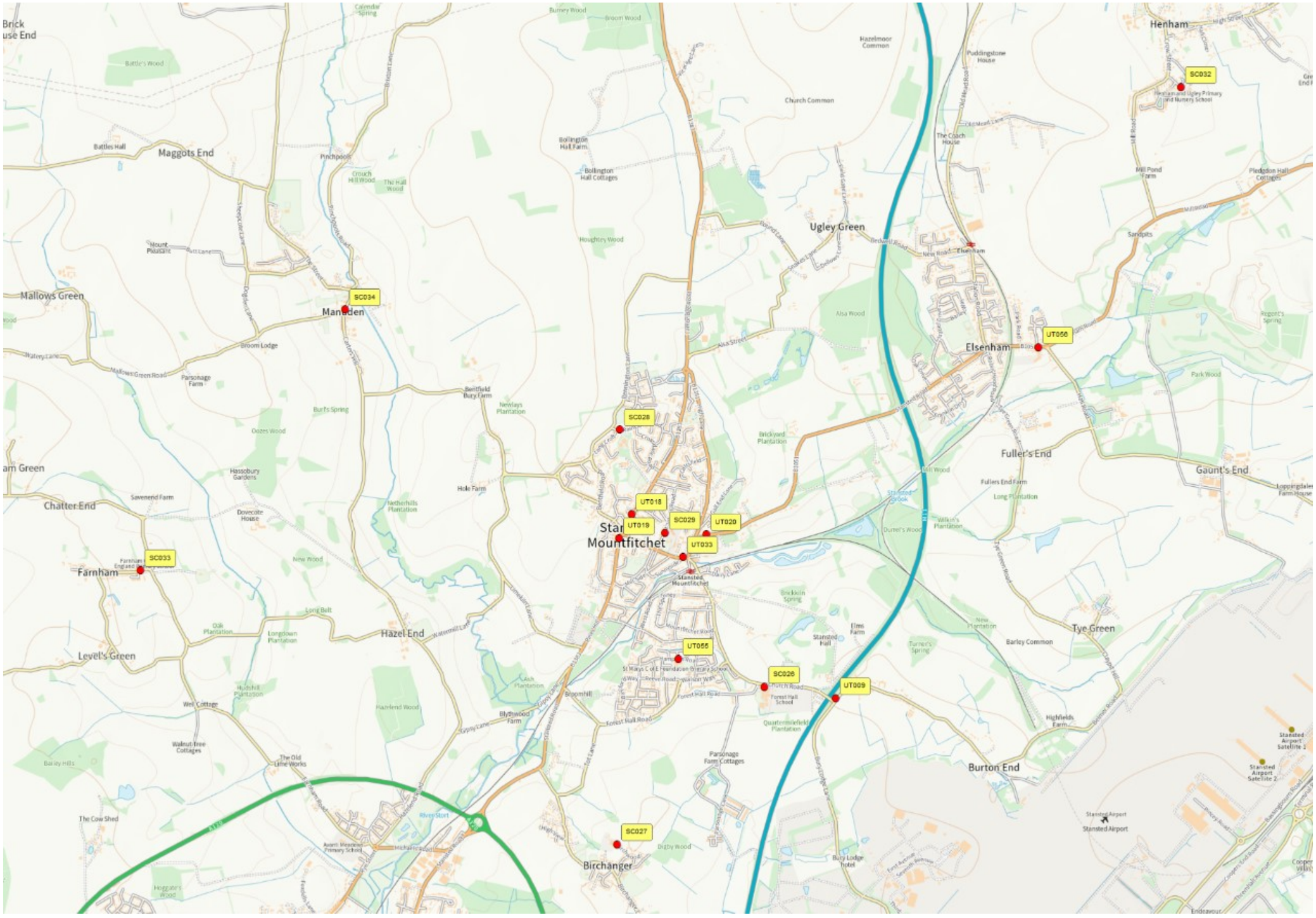


Figure D.5 – Map of Non-Automatic Monitoring Sites: Newport

Figure D.6 – Map of Non-Automatic Monitoring Sites: Great Dunmow & Great Easton

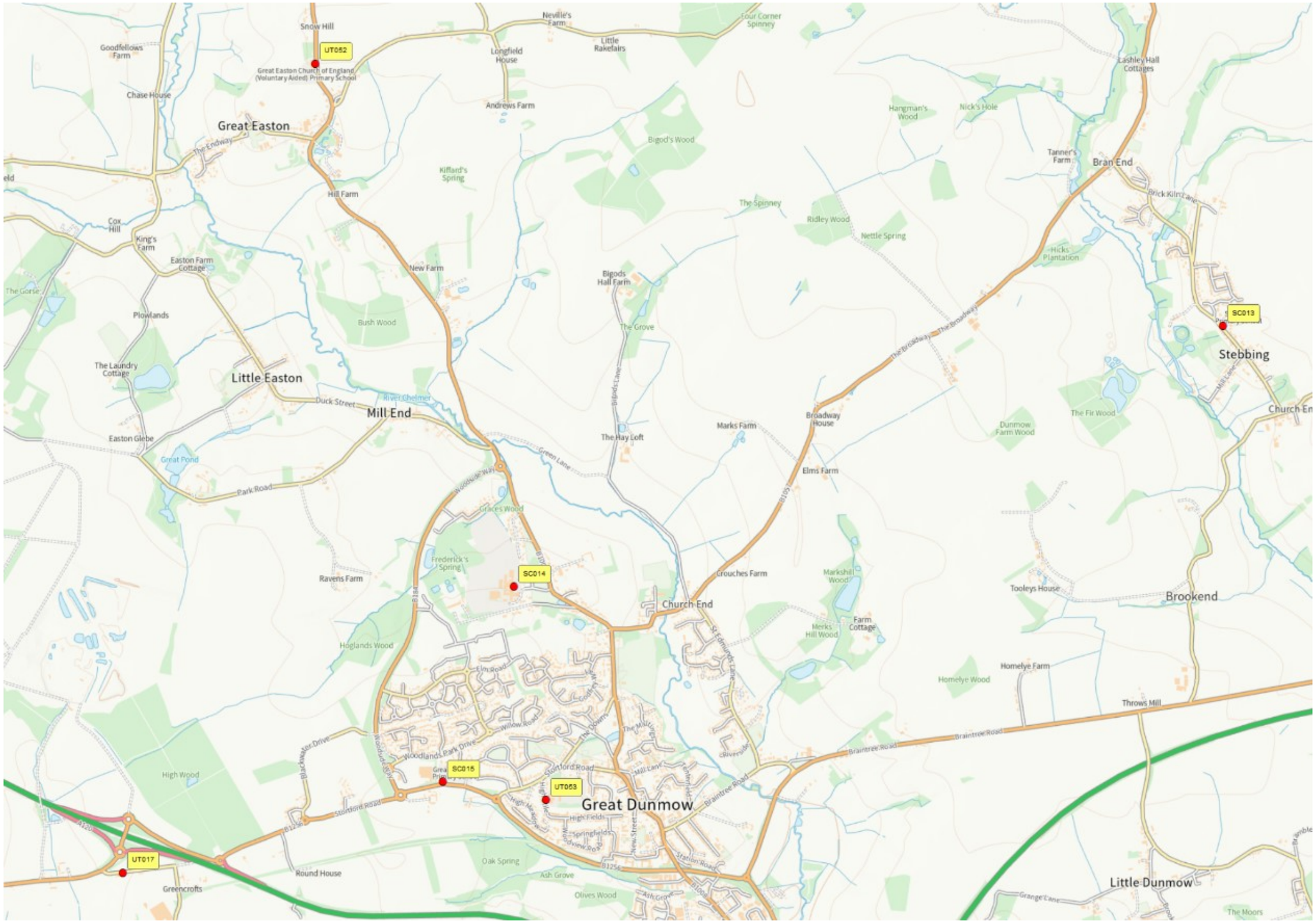


Figure D.7 – Map of Non-Automatic Monitoring Sites: Felsted

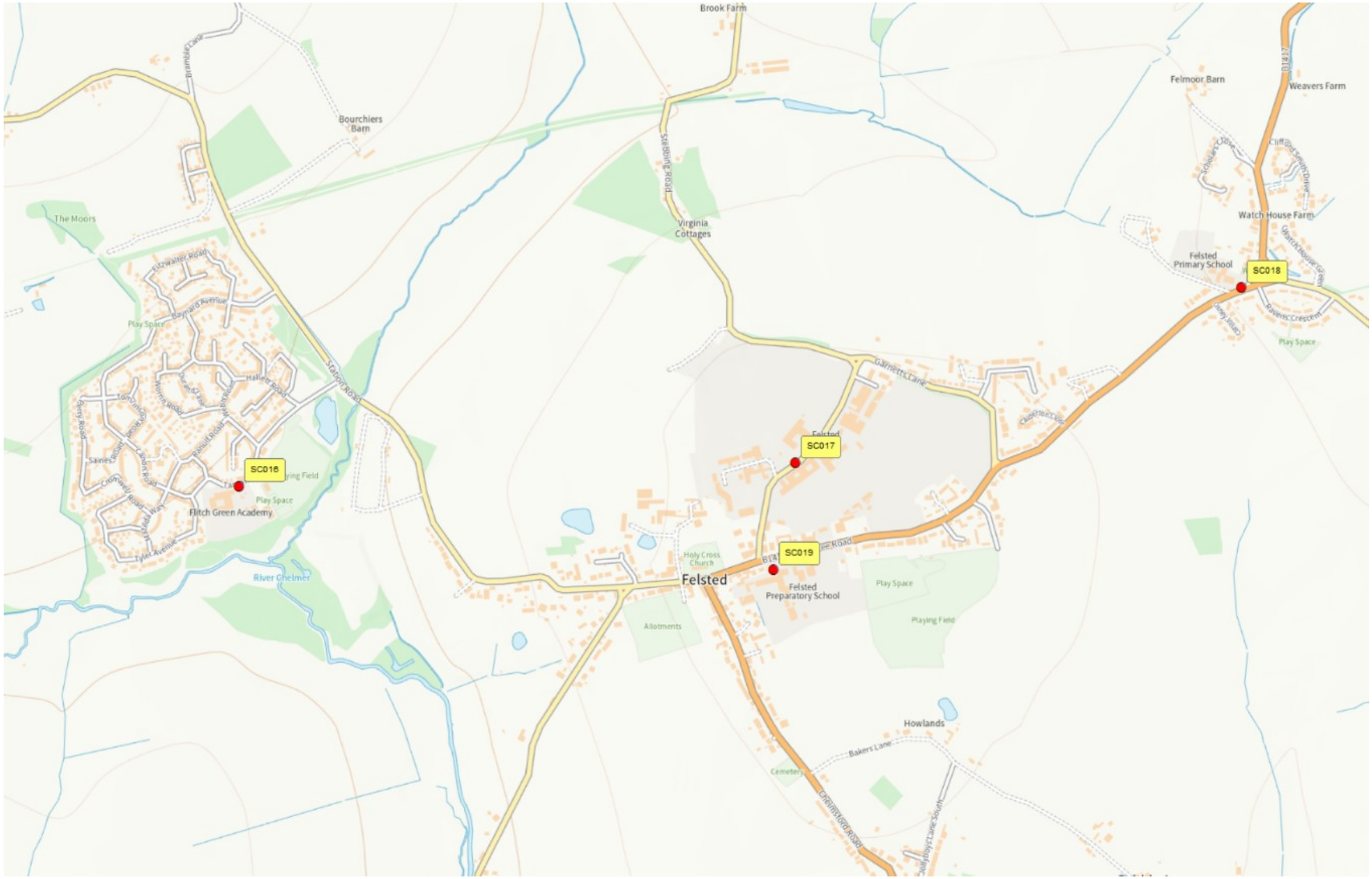


Figure D.8 – Map of Non-Automatic Monitoring Sites: Rickling Green

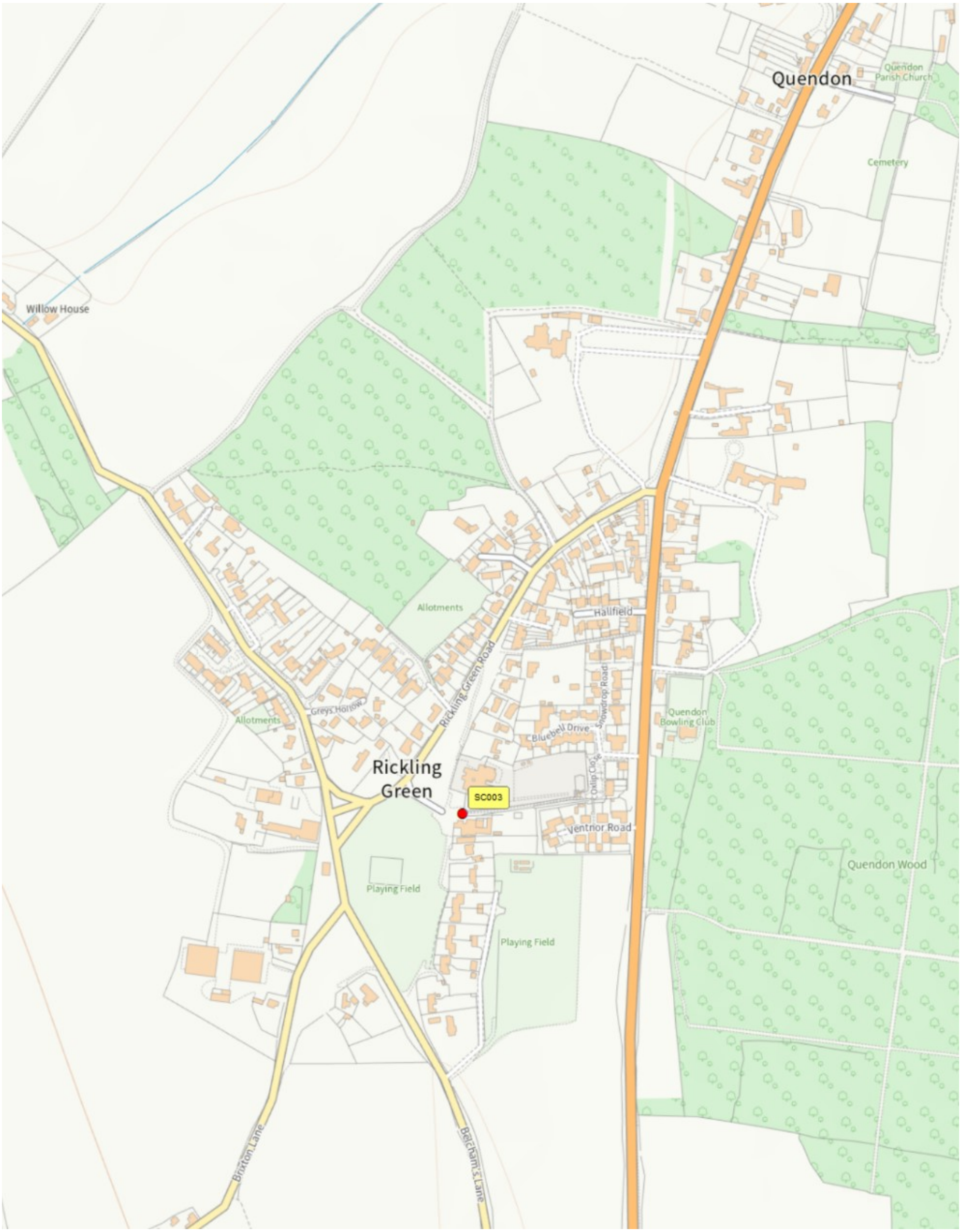


Figure D.9 – Map of Non-Automatic Monitoring Sites: Clavering

Figure D.10 – Map of Non-Automatic Monitoring Sites: Little Hallingbury, Hatfield Heath, Hatfield Broad Oak & Leaden Roding

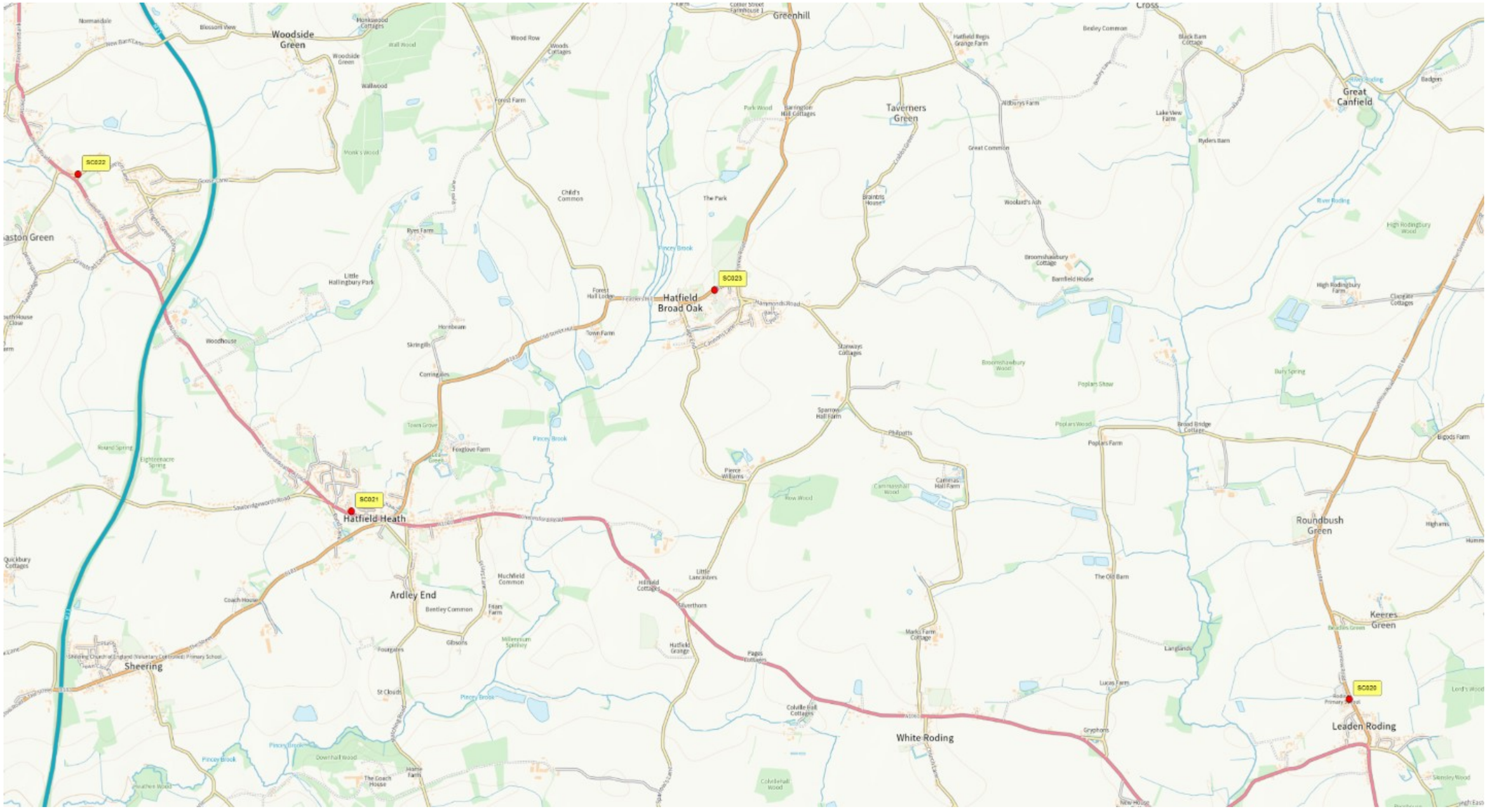


Figure D.11 – Map of Non-Automatic Monitoring Sites: Chrishall

Figure D.12 – Map of Non-Automatic Monitoring Sites: Great Chesterford

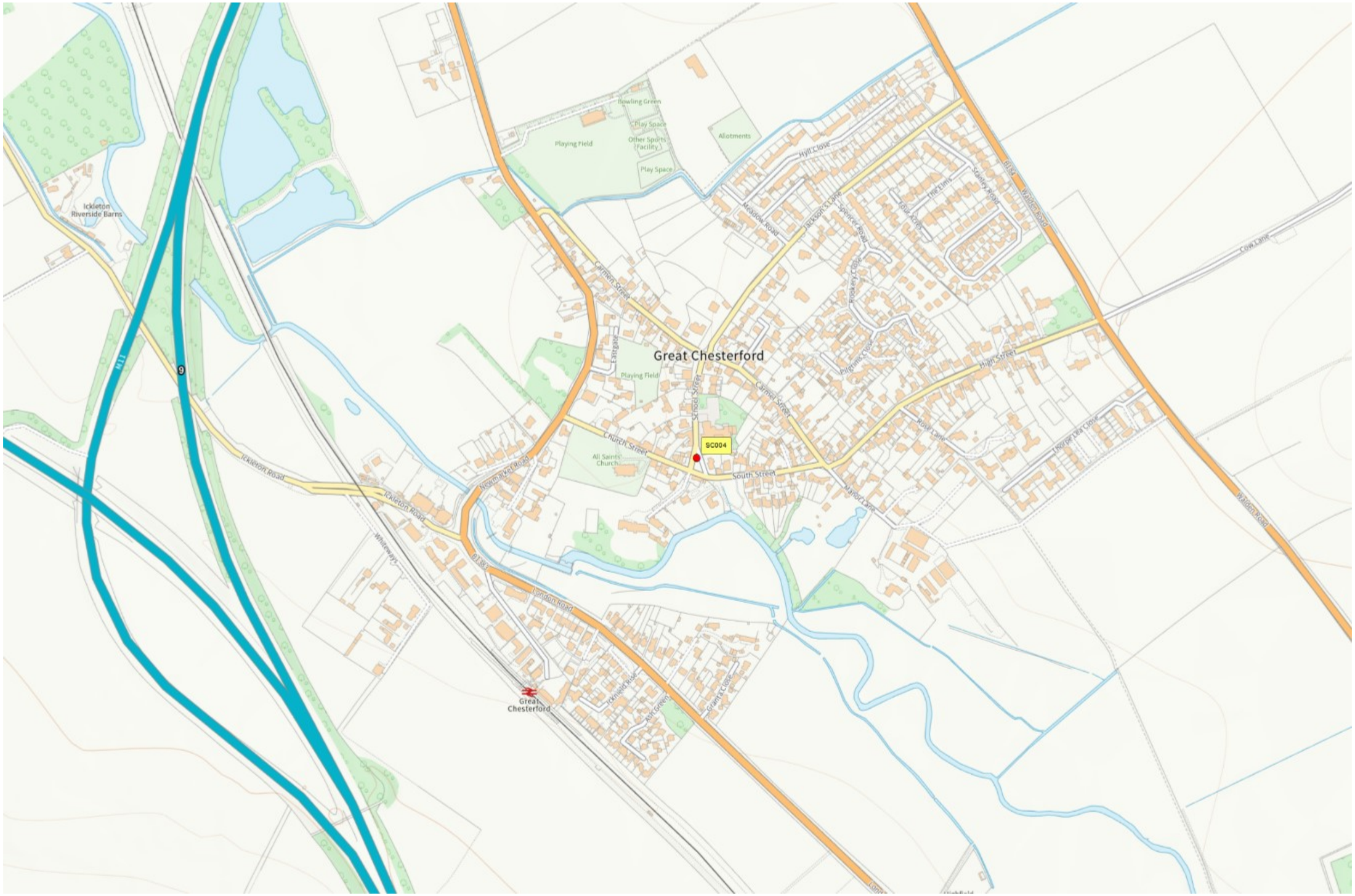


Figure D.13 – Map of Non-Automatic Monitoring Sites: Ashdon

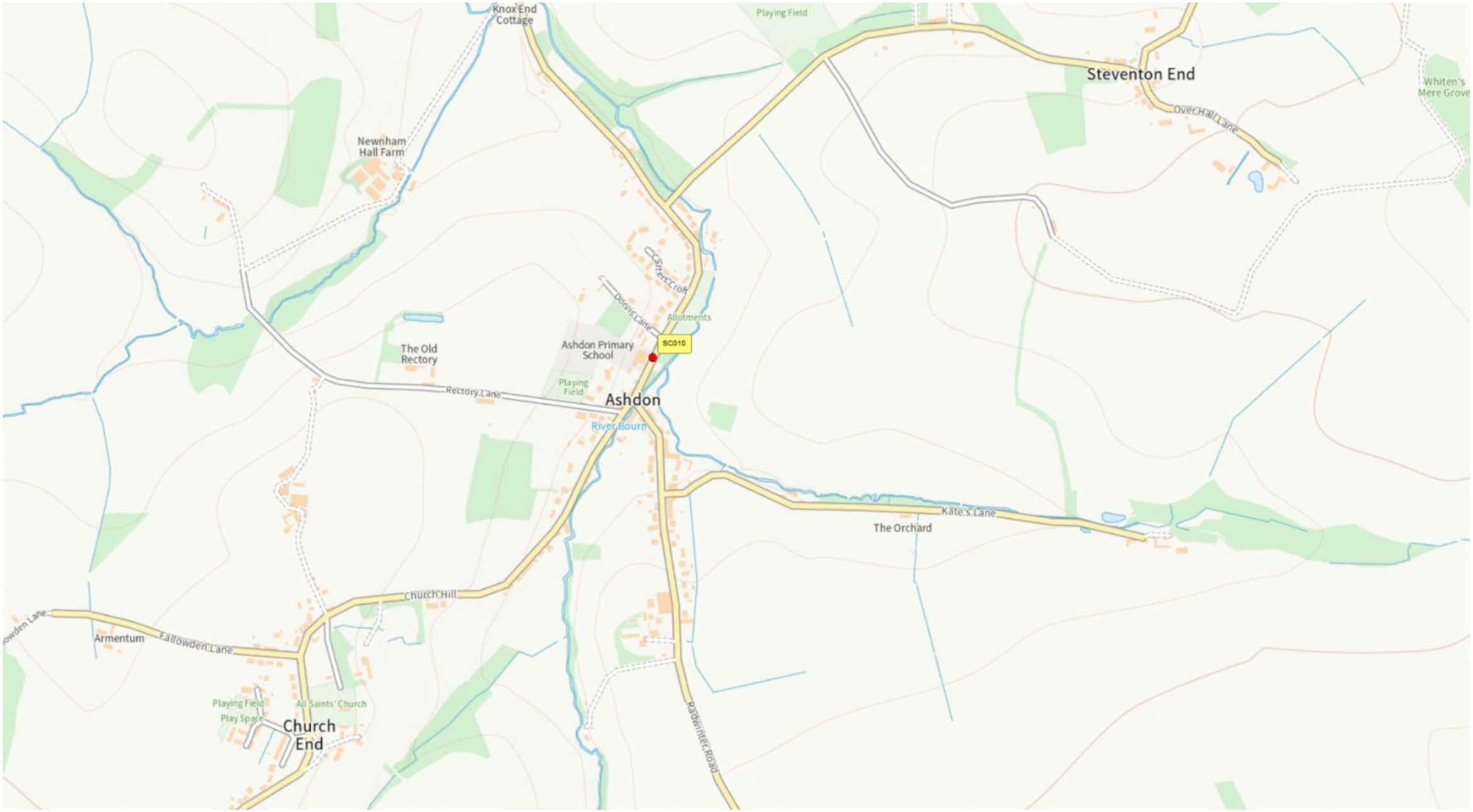


Figure D.14 – Map of Non-Automatic Monitoring Sites: Great Sampford, Radwinter & Tye Green

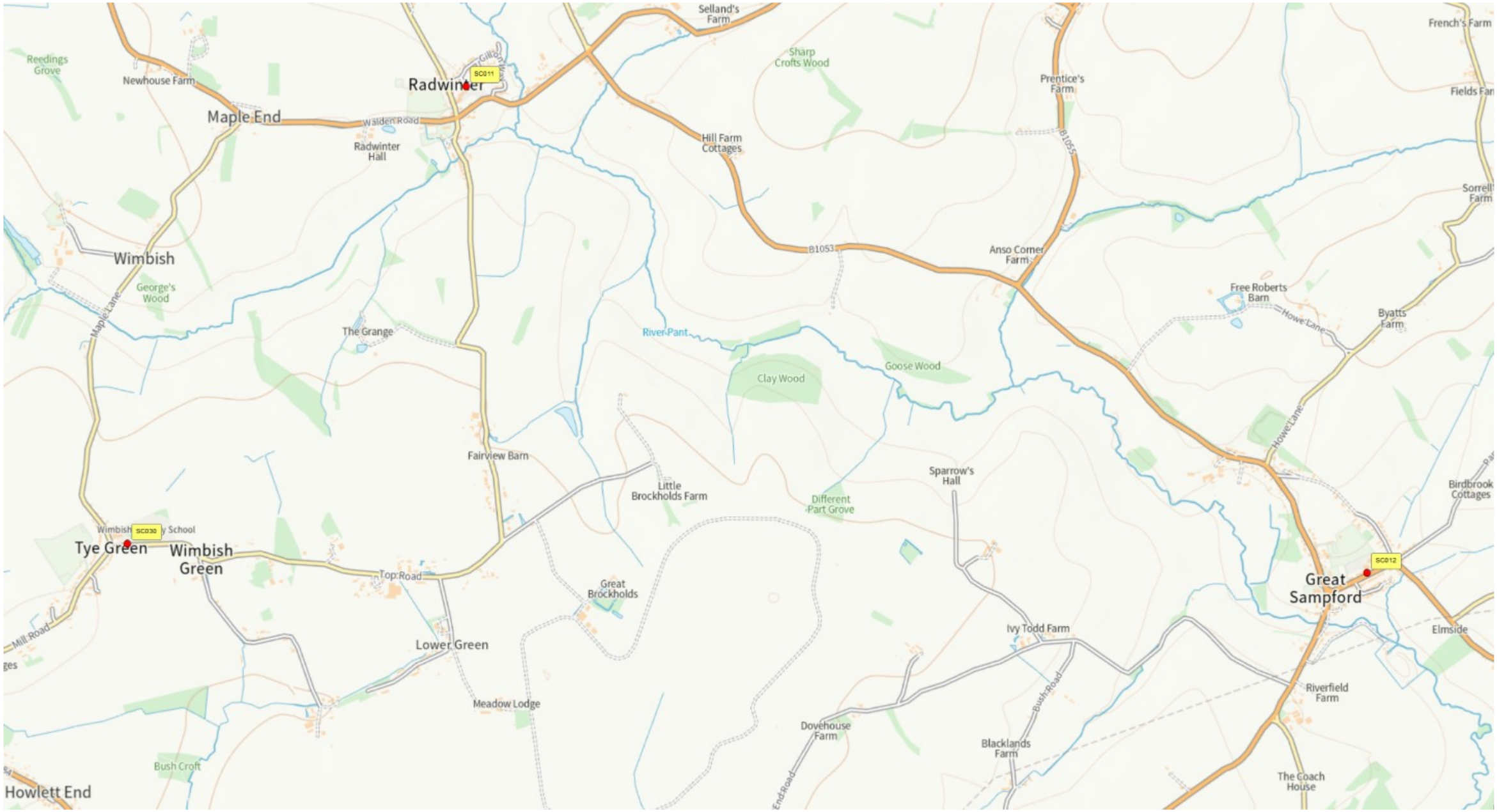
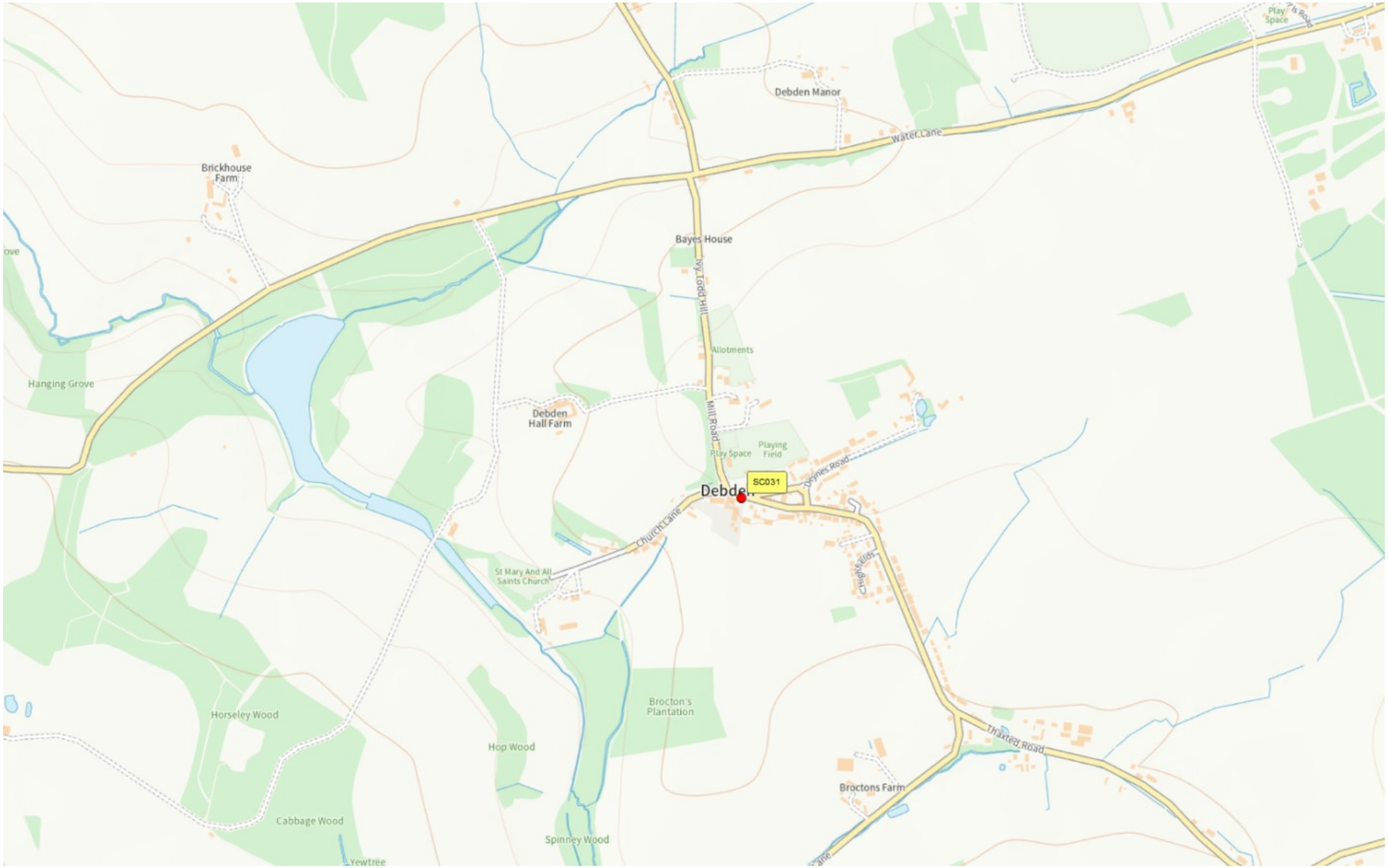


Figure D.15 – Map of Non-Automatic Monitoring Sites: Debden



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[5]

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

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

Appendix F: Non-Reference Air Quality Sensors

In 2022 Uttlesford District Council employed three low cost sensors to measure pollution within the district. Data analysis has found that some of the datasets should be excluded on quality grounds. The finalised results for 2022 are in the table below:

Table F.1 – Non-Reference Air Quality Sensors

Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Sensor	Annual Mean Concentration (µg/m3)			
							NO2	O3	PM2.5	PM10
Hill House	Roadside	555917	223377	NO2 / O3 / PM2.5 / PM10	No	Aeroqual AQY	Poor Data Quality No Results	Poor Data Quality No Results	Poor Data Quality No Results	Poor Data Quality No Results
Thaxted	Roadside	561224	230889	NO2 / O3 / PM2.5 / PM10	No	Aeroqual AQY	Poor Data Quality No Results	Poor Data Quality No Results	5.6	9.6
Junction Thaxted Rd & Radwinter Rd, Saffron Walden	Roadside	554357	238444	PM2.5 / PM10	Yes	Osiris Particle Monitor	N/A	N/A	5.4	10.4

The data obtained from non-reference air quality sensors can be useful in determining long term trends however as it is not of reference quality shouldn't be used as evidence for undertaking air quality or planning and development management related decisions.

Data analysis has shown significant amounts of poor data quality recorded by the Aeroqual AQY sensors. These sensors will be decommissioned and shall not be monitoring in 2023.

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'
AQIA	Air Quality Impact Assessment – Reports provided in support of planning applications.
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	Air Quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EU	European Union
Euro Standard	Euro standards define the acceptable limits for exhaust emissions of new vehicles sold in EU and EEA member states.
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
Street Canyon	Road which is flanked by buildings resembling a canyon
TEA	Triethanolamine – substance used in diffusion tubes for absorbing nitrogen dioxide
UK-AIR	An information resource providing in-depth information on air quality and air pollution in the UK. A range of information is available, from the latest pollution levels, pollution forecast information, a data archive, and details of the various monitoring networks.
UKAS	United Kingdom Accreditation Service
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'

References

- Defra Diffusion Tube Bias Adjustment Factors Spreadsheet available at; https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html
- Defra LAQM Summary of Laboratory Performance in AIR NO_2 PT Scheme available at; https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html
- Essex Air Quality Consortium available at; http://www.essexair.org.uk
- Essex Air Twitter Feed available at; https://twitter.com/essexair
- EssexCarShare.com available at; https://liftshare.com/uk/community/essex
- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland available at; https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland available at; https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-Policy-Guidance-2022.pdf
- Public Health Outcomes Framework Indicator D01 available at; https://fingertips.phe.org.uk/profile/public-health-outcomes-framework
- Saffron Walden Clean Air Project available at; https://www.uttlesford.gov.uk/saffron-walden-clean-air-project
- Uttlesford Air Quality Action Plan 2017 – 2022 available at; https://www.uttlesford.gov.uk/media/7346/Air-Quality-Action-Plan-2017-2022/pdf/AQMA_Action_Plan_Nov_2017_pdfa.pdf?m=636988925812370000
- Uttlesford District Council Air Quality Grant Information available at; https://www.uttlesford.gov.uk/saffron-walden-clean-air-project