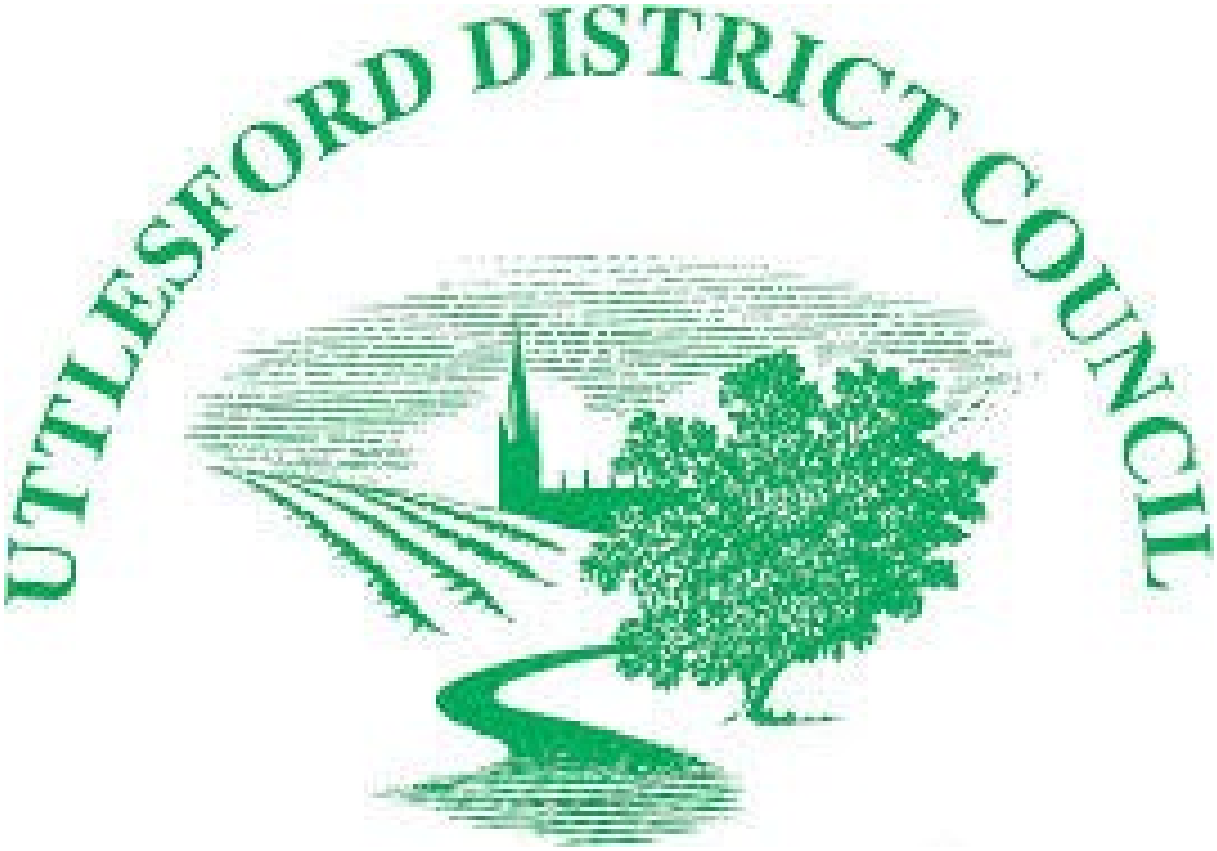

2018 Air Quality Annual Status Report (ASR)

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

July 2018

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Executive Summary: Air Quality in Our Area

The 2018 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 2017, **no** monitoring locations in Uttlesford exceeded the Air Quality Objectives for nitrogen dioxide or particulate matter.

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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

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.

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

Uttlesford has one Air Quality Management Area (AQMA) within the Saffron Walden town centre, declared for Nitrogen Dioxide (NO_2) exceedances.

In 2017 the Council adopted a new Air Quality Action Plan designed to achieve compliance with the Air Quality Objectives.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Conclusions and Priorities

In 2017, Uttlesford District Council did not measure any exceedances of Nitrogen Dioxide (NO_2) or Particulate Matter (PM_{10}) for Air Quality Objective.

Air quality monitoring identified that the National Air Quality Objectives for fine particulate matter ($PM_{2.5}$) were below the target value.

It is important to view air quality over the long term as bias adjustment and meteorological variation can significantly influence pollutant concentrations.

Uttlesford District Council priorities for air quality over the forthcoming year are:

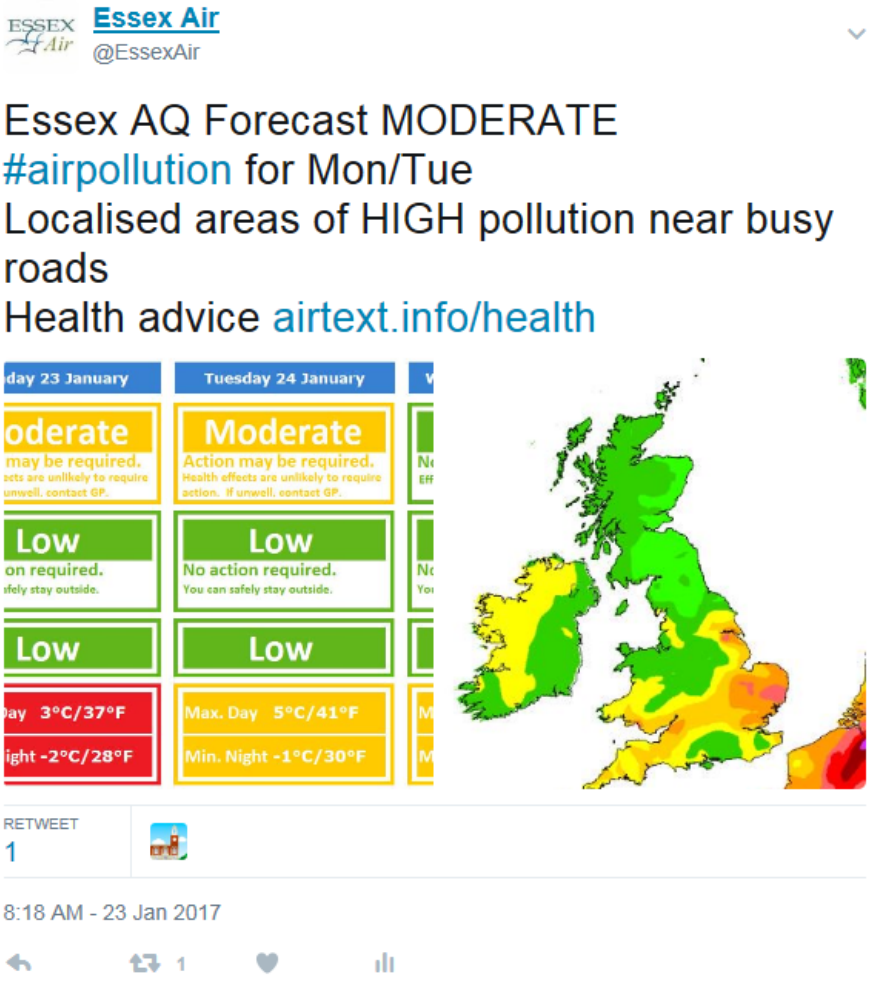
- Implementing measures contained within the newly adopted Air Quality Action Plan
- Renewal of equipment within the UTT1 air quality monitoring station
- Relocation of UTT2 monitoring station

There is no need to consider amendment of the Air Quality Management Area or the Action Plan at this time.

Local Engagement and How to get Involved

Uttlesford District Council is a member of the Essex Air Quality consortium. The purpose of the Essex Air is to promote improvements in air quality related issues. The Essex Air web site provides a daily forecast of air pollution. Also, the @EssexAir twitter feed provides localised weekly air pollution forecasts.

Figure i.1 - Essex Air Twitter Air Quality Notifications



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.

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1 Local Air Quality Management

This report provides an overview of air quality in Uttlesford during 2017. 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 Uttlesford District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E. in Appendix E.

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 must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of the AQMA declared by Uttlesford District Council can be found Table 2.1. Further information related to AQMAs in Uttlesford, including the AQMA order and maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/details?aqma_ref=1520.

Alternatively, see Appendix D: Maps of Monitoring Locations and AQMA, which provides for a map of air quality monitoring locations in relation to the AQMA.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Saffron Walden AQMA	Declared 01/08/2007 Amended 12/09/2012	NO2 Annual Mean	Saffron Walden	Circle of radius 1400m radius centred on Elm Grove in Saffron Walden Town Centre. Revokes and replaces 3 previous Uttlesford AQMAs	NO	42.9	µg/m3	35.27	µg/m3	Air Quality Action Plan 2017-2022	Oct-17	https://www.uttlesford.gov.uk/CHttpHandler.ashx?id=7346&p=0

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

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

In 2017, compliance with the Air Quality Objectives has been achieved within the Saffron Walden AQMA. In 2017 the Council adopted a new 5-year Air Quality Action Plan which sets out local measures proportionate to the level of previous exceedances at key junctions within Saffron Walden AQMA which Uttlesford will deliver with the aim of maintaining good air quality and preventing further exceedances of the relevant objective at residential properties or other sensitive receptors.

Progress on delivering the measures is set out in Table 2.2 and a priority for the coming year will be to continue to deliver measures set out within the Action Plan.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion 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 Policies	UDC	2017	Concurrent with adoption of Local Plan	Policies contained in the Local Plan once adopted. Use of sec 106 funds to implement action plan	Low, but potential to mitigate against emission increases associated with future growth.	Policies have been included in the Regulation 19 Pre-submission Local Plan for public consultation until August 2018 Cost : within existing resources.		

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 Technical Guidance	UDC	Early 2017	Late 2017	Publicly available by December 2017	Low, but potential to mitigate against emission increases associated with future growth.	Technical Guidance document has been completed and included in the Regulation 19 Pre-submission Local Plan for public consultation until August 2018 Cost :within existing resources		
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	ECC & UDC	2017	2017-2022	Number of new routes provided, increase in no of storage facilities per annum and users of facilities year on year	Low, dependant on reduction in number.of vehicles on road network	UDC is engaging with ECC to review existing provisions and work with ECC on an on-going basis to achieve outcomes.		Outcomes dependent on priorities & 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	UDC	2017	2018	Increase in no of storage facilities and users of facilities from baseline	Low, dependant on reduction in number of vehicles on road network	To link in with the Travel plan. Engage with property services & apply for funding where appropriate where need has been identified. Feasibility study by March 2019.		

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 and workplace travel planning	ECC & UDC	Engage with ECC and other stakeholders by mid 2017	2018-2022	Number of new or upgraded TPs. Increase in walking or cycling to school or workplace from baseline	Low, dependant on reduction in number of vehicles on road network	Cost within existing resources		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	Facilitating home working	ECC & UDC	2017	To be confirmed	Number of businesses and homes enabled to access superfast broadband by 2019. Increase in no of people regularly working from home	Low, dependant on reduction in number of vehicles on road network	UDC investment of £500k towards inclusion in Superfast Essex broadband procurement to be implemented by end of 2019.		
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	Congestion management	ECC	2019	To be confirmed	Junction capacity improvements at the four key junctions identified in the action plan. Reduction in queue lengths from identified baseline.	Medium, dependant on reduced congestion	Some funding available from sec 106 agreements.		Reliant on ECC work programme following approval of the Local Plan and developer contributions once commenced. Timescale beyond control of UDC.

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 be identified and implemented ahead of adoption of the local plan	Traffic Management	Congestion management	ECC	2017-18	To be confirmed	Improvements to junctions carried out, improved parking on main routes, restrictions to HGVs. Reduction in queue lengths	Medium, dependant on reduced congestion			Reliant on ECC and North Essex Parking Partnership (NEEP) to be in agreement with any changes. No realistic target date can be applied
9	To support targeted enforcement of parking restrictions where identified to be an issue, on main routes through the town	Traffic Management	Parking enforcement on highway	UDC	2017	2018	No of parking penalty notices issued on main routes	Low, dependant on reduced congestion	To survey compliance with parking restrictions using data collected by North Essex Parking Partnership(NEEP) by October 2018. Cost :within existing resources.		
10	To provide clear informative signage to Swan Meadow car park, new amenities, leisure centre, food stores, Audley End .	Transport Planning and Infrastructure	Other	UDC	2017	2018	No of new signs provided	Low, dependant on reduced congestion	To liaise with ECC highways to design and provide appropriate signage on approaches to facilities, by December 2018 and thereafter		

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 Plans	UDC	2017	2019	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	Low, dependant on reduced congestion	Conduct a UDC workplace travel survey – July 2018. Measure outcome of travel plan (July 2019). 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 Plant and transport	Low emission fuels for stationary sources, company vehicle procurement, prioritising uptake of low emission fuels	UDC	2017	2017-2022	No kW renewable energy within SW, review of fuel usage and type, no of UDC LEVs	Medium	To develop working group by December 2018 to consider options for replacement energy provision, fleet procurement and conversion of existing fleet to low emission fuel, and cost benefit. Cost : capital investment and staff time		

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 service improvements	ECC & UDC	Mid 2017	2018-19	No of new or improved services available, information available in UDC buildings. Increase in bus usage of 5%	Low	Engage with ECC procurement services by Sept 2018 Engage with in house communications team to promote and provide effective information on public transport services at UDC access points and website, linked to ECC information, by March 2019		
14	To identify opportunities to raise public awareness of air quality issues through education initiatives and publicity campaigns	Public Information	Via leaflets Via the internet	UDC	2017-2022	2017-2022	No of campaigns, target one per annum.	Low, dependant on behavioural changes	Targeted campaign delivered to schools & the general public , coincided with National Clean Air Day in June 2017 and June 2018. Delivery of presentations to schools throughout 2018 . Cost :within existing resources		

15	To provide advice and raise awareness of car sharing and associated database software available to employers	Alternatives to private vehicle use	Car and lift sharing schemes	UDC	2017	2018	No of new car sharing schemes set up, target one per annum. Reduction of 1-5% of private car commuter journeys	Low dependant on reduced congestion	Cost :within existing resources		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 schemes	UDC	2019	2020	Review of charging policy	Low, dependant on raised uptake of LEVs	To carry out a feasibility study of permit style scheme by March 2020 incorporating capital costs and take up of LEV's		
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 licence conditions	UDC	2017	2018	Review of licensing policy	Low	To be linked to annual review of taxi licensing policy. Feasibility determined by March 2019		
18	To encourage ECC to set emission standards for new and existing buses under contract operating within the AQMA	Vehicle fleet efficiency	Promoting low emission public transport	ECC	2017-18	To be confirmed	Review of contractual arrangements	Low	Discussions with ECC to achieve outcome by December 2018		
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	UDC	2018	To be confirmed	No of LEV fleet vehicles on town road network.	Potentially medium, dependant on uptake of vehicles.	Discussions with largest fleet operators by December 2018		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	UDC	2018	2019-2022	No of points installed per annum, target 4	Potentially medium, dependant on uptake of vehicles.	Existing provision two points on UDC sites. Feasibility study of increasing provision to be carried out in conjunction with point operators, by March 2019 . Cost of each point approx. £3000, grant funding from central government schemes to be sought.		
21	To work with ECC on introducing delivery time restrictions to High Street SW	Freight and delivery management	Off peak hours deliveries	ECC	2017	To be confirmed	Restrictions in place, reductions in HGV parking	Low	Reliance on ECC to deliver outcome, discussions to be held by December 2018		
22	To carry out additional monitoring of NO2 within Saffron Walden to inform basis for decision making.	Public Information	Other	UDC	2017	2017-2022	Provision of localised data for incorporation into air quality modelling	Low, provides evidence base for actions	Automatic monitoring station at Thaxted Rd/Radwinter Rd junction, commissioned January 2018. Review of diffusion tube locations completed with new sites operational from January 2018 replacing some sites.		

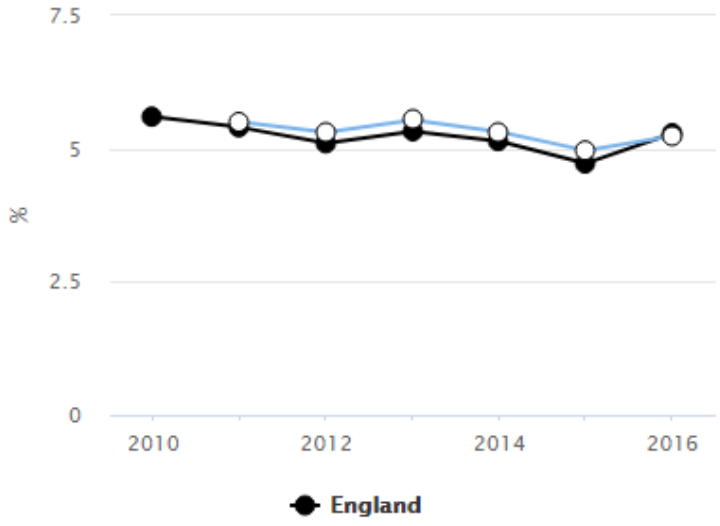
2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

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.

Uttlesford District Council monitors $PM_{2.5}$ concentrations within Saffron Walden town centre. Monitored levels (annual mean) are below 20µg/m^3 and are likely to be representative of the local area.

The Council notes the Public Health Outcomes Framework indicator 3.01 – Fraction of mortality attributable to particulate ($PM_{2.5}$) air pollution which for 2016 gave a value of 5.2% which despite yearly fluctuation has reduced from 5.5% in 2011. These values are broadly similar to other authorities within the region.

Figure 2.1 - Public Health Indicator 3.01 - Fraction of mortality attributable to particulate air pollution



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

- Regular inspections of industrial processes permitted by Uttlesford District Council where combustion and non-combustion processes could lead to anthropogenic emissions of $PM_{2.5}$
- Working with Essex County Council (highway authority) to deliver Major improvement schemes. In addition to reduced exhaust emissions, these schemes will reduce non-exhaust emissions from brake and tyre wear by making traffic flows smoother

2.4 Development Control

New Local Plan

Air quality issues are routinely considered in response to planning consultations within the existing policy framework. Where appropriate planning conditions are added to developments to mitigate the potential for increased air pollution. The Air Quality Action Plan for the Saffron Walden AQMA identifies the need to develop a new Air Quality Technical Planning Guidance document to support this process.

The guidance has been prepared to inform and support the policies set out by Uttlesford District Council relating to air quality within the existing Local Plan and has been included as part of the consultation process for the emerging Local Plan. It is designed to take account of National Planning Practice Guidance, National Policy and relevant local information to ensure that good air quality is maintained and where possible improved through the development control process. The guidance determines when air quality assessments are required, sets out measures for on-site mitigation and provide guidance on offsetting the impact of development. In addition to traffic pollution, biomass, CHP and STOR installations are also considered.

Policies aimed at improving air quality have been included in the Uttlesford Regulation 19 pre-submission Local Plan. It is proposed to implement the following policies:

Policy TA1: Accessible development

Development and transport planning will be co-ordinated to reduce the need to travel by car, increase public transport use, cycling and walking.

Policy TA2: Sustainable Transport

Sustainable modes of transport should be facilitated through new developments to promote accessibility and integration into the wider community and existing networks. Priority should be given to cycle and pedestrian movements and access to public transport.

Policy TA3: Provision of Electric Charging points for Vehicles in new developments:

A standard for the rate of provision is provided in the policy.

Policy TA5: New Transport Infrastructure or Measures:

The provision of new or enhanced transport infrastructure and initiatives will be pursued and implemented in partnership with the relevant transport providers. Developer funding for or provision of highway and transportation works and measures will be sought, including for walking and cycling routes, and improvements to Cambridge to Stansted railway and stations.

Policy EN14: Pollutants

Permission will not be granted where the development and uses would cause adverse impact to occupiers of surrounding land uses or the historic and natural environment, unless the need for development is judged to outweigh the effects caused and the development includes mitigation measures to minimise the adverse effects. Developments sensitive to pollutants will be permitted where the occupants would not experience adverse impact, or the impact can be overcome by mitigation measures.

Policy EN15 Air Quality

Development will be permitted where:

1. It can be demonstrated that it does not lead to significant adverse effects on health, the environment or amenity from emissions to air; or
2. Where a development is a sensitive end-use, that there will not be any significant adverse effects on health, the environment or amenity arising from existing poor air quality.

Applicants must demonstrate that:

1. There is no adverse effect on air quality in an Air Quality Management

Area (AQMA) from the development;

2. Pollution levels within the AQMA will not have a significant adverse effect

on the proposed use/users;

3. Development has regard to relevant UDC Air Quality Technical Guidance;
4. Development within or affecting an Air Quality Management Area (AQMA) will also be expected to contribute to a reduction in levels of air pollutants within the AQMA;
5. Development will not lead to an increase in emissions, degradation of air quality or increase in exposure to pollutants at or above the health based air quality objective;
6. Any impacts on the proposed use from existing poor air quality are appropriately mitigated;
7. The development promotes sustainable transport measures and use of low emission vehicles in order to reduce air quality impacts of vehicles.
8. Applicants shall, where appropriate prepare and submit with their application a relevant assessment, taking into account guidance current at the time of application.
9. Where development proposals would be subject to unacceptable air quality standards or would have an unacceptable impact on air quality standards they will be refused.
10. Where emissions from the proposed development approach EU Limit values or national objectives the applicant will need to assess the impact on local air quality by undertaking an appropriate air quality assessment. The assessment shall have regard to guidance current at the time of the application to show that the national objectives will still be achieved.
11. Larger development proposals that require a Travel Plan and Transport Assessments/Statements will be required to produce a site based Low Emission Strategy. This will be a condition on any planning permission given for any proposed development which may result in the deterioration of local air quality and will be required to ensure the implementation of suitable mitigation measures.

2.5 Partnership working

Uttlesford District Council continues to engage with Essex County Council (the Highway Authority) to ensure options for appropriate traffic infrastructure alterations are developed to reduce congestion and support the emerging Local Plan.

The inclusion of air quality by the Department of Health and Social Care as an indicator for public health is intended to encourage action to improve air quality nationally and to raise awareness of its effects on how well people live at all stages of life. Public Health colleagues have been involved with development of draft local plan policies aimed to ensure the health impact of development is fully considered, and with promoting non-car travel. Increasing the number of walking and cycling journeys to access school, workplaces or amenities would have wider benefits for an individual's health and wellbeing associated with increased activity.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Uttlesford District Council undertook automatic (continuous) monitoring at 2 sites during 2017.

- Site UTT1 measured NO_2 and $PM_{2.5}$
- Site UTT3 measured NO_2 and PM_{10}

The data ratification process identified serious errors in the dataset measured by the NO_2 analyser at the automatic monitoring site of UTT1. A small leak was identified where air was drawn into the analyser from the enclosure which continued to be problematical and affected a large part of the years dataset. The decision has therefore been made to not report any data from this analyser. The analyser is 21 years old and the Council is looking to renew to prevent further data loss.

Table A.1 in Appendix A provides detail of the sites.

Details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Maps showing the location of the monitoring sites are provided in Appendix D.

3.1.2 Non-Automatic Monitoring Sites

Uttlesford District Council undertook non-automatic (passive) monitoring of NO_2 at 27 sites during 2017.

Table A.2 in Appendix A provides detail of the sites.

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.

Maps showing the location of the monitoring sites are provided in Appendix D.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, "annualisation" and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

In 2017, Uttlesford District Council did not measure any exceedances of the annual mean or 1-Hr mean Air Quality Objective for Nitrogen Dioxide (NO_2).

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

In 2017, Uttlesford District Council did not measure any exceedances of the annual mean or 24-Hr mean Air Quality Objective for Particulate Matter (PM_{10}).

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years.

Air quality monitoring identified that fine particulate matter ($PM_{2.5}$) was below the target values set for the National Air Quality Objectives.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
UTT1	Hill St, Saffron Walden	Roadside	553825	238409	NOx, NO, NO2; PM2.5	Y	Chemiluminescent; BAM (with Smart Heater)	25	4.1	2
UTT3	Mobile Unit London Road, Saffron Walden	Roadside	553570	237908	NOx, NO, NO2; PM10	N	Chemiluminescent, BAM	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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
UT001	High Street	Urban Centre	553709	238417	NO2	Yes	15	1.5	NO	2
UT002	Airport 1 Thatched Cottage	Roadside	552706	221403	NO2	No	1	10	NO	2
UT003	Gibson Gardens	Urban Background	553554	238218	NO2	Yes	5.1	1.5	NO	2
UT004	YHA	Kerbside	553598	238595	NO2	Yes	0.8	0.4	NO	2
UT005	Thaxted Road	Kerbside	554336	238454	NO2	Yes	2.4	0.5	NO	2
UT006	Stansted, Norman Ct	Urban Background	551358	225452	NO2	No	0	3.9	NO	2
UT007	Airport 2 Rose Cottage	Roadside	556186	223724	NO2	No	0	7.5	NO	2
UT008	Hallingbury	Roadside	551189	217438	NO2	No	69	20	NO	2
UT009	Burton End	Roadside	552403	223965	NO2	No	17	27	NO	2
UT010	Newport	Kerbside	551246	233649	NO2	No	40	0.1	NO	2
UT011	33 High Street	Urban Centre	553697	238452	NO2	Yes	0	2.7	NO	2
UT012	Town Hall	Urban Background	553879	238510	NO2	Yes	20	0.1	NO	2
UT013/UTT014/UTT027	Fire Station Co-Located	Roadside	553825	238409	NO2	Yes	25	4.1	YES	2
UT024	Takeley Hill	Rural	554671	221010	NO2	No	N/A	118	NO	2
UT025	Elman's Green	Rural	553271	221072	NO2	No	N/A	271	NO	2

UT026	South Gate	Rural	553141	218694	NO2	No	N/A	139	NO	2
UT028	London Rd	Roadside	553755	238092	NO2	Yes	0.8	2	NO	2
UT029	Debden Road	Roadside	553770	238076	NO2	Yes	0.5	0.5	NO	2
UT030	Friends School	Kerbside	553875	237764	NO2	Yes	10	0.5	NO	2
UT031	Mount Pleasant Road	Roadside	554178	237767	NO2	Yes	2	1.5	NO	2
UT032	Borough Lane	Roadside	553625	237856	NO2	Yes	0	7	NO	2
UT033	Chapel Hill	Roadside	551377	224913	NO2	No	0	3	NO	2
UT034	Four Ashes	Roadside	556101	221243	NO2	No	8	1.5	NO	2
UT036	Church Street	Urban Centre	553718	238530	NO2	Yes	0	1	NO	2
UT037	Castle Street	Kerbside	553923	238770	NO2	Yes	1	1	NO	2
UT038	Oak Cottage HBO	Kerbside	554691	216558	NO2	No	0	1	NO	2
UT039	Newport High Street	Roadside	552156	234034	NO2	No	0	1.2	NO	2

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO2 Monitoring Results

Site ID	Site Name	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
						2013	2014	2015	2016	2017
UTT1	Hill St, Saffron Walden	Roadside	Automatic	0	0	23.70	22.90	22.13	25.66	N/A
UTT3	Mobile Unit London Road, Saffron Walden	Roadside	Automatic	89	89	N/A	N/A	N/A	23.95	18.34
UT001	High Street	Urban Centre	Diffusion Tube	83	83	**38.94**	**33.06**	**36.35**	**40.04**	33.96
UT002	Airport 1 Thatched Cottage	Roadside	Diffusion Tube	75	75	23.82	20.69	21.41	26.69	21.29
UT003	Gibson Gardens	Urban Background	Diffusion Tube	92	92	16.04	13.66	12.26	16.22	13.43
UT004	YHA	Kerbside	Diffusion Tube	100	100	**42.74**	37.34	**42.17**	**46.90**	38.00
UT005	Thaxted Road	Kerbside	Diffusion Tube	92	92	36.24	38.59	**41.17**	**47.52**	37.98
UT006	Stansted, Norman Ct	Urban Background	Diffusion Tube	100	100	15.94	15.06	14.13	16.68	13.46
UT007	Airport 2 Rose Cottage	Roadside	Diffusion Tube	100	100	24.84	19.99	22.69	27.08	23.38
UT008	Hallingbury	Roadside	Diffusion Tube	92	92	29.71	26.22	25.15	29.88	22.79
UT009	Burton End	Roadside	Diffusion Tube	100	100	38.73	33.61	35.51	**43.04**	36.82
UT010	Newport	Kerbside	Diffusion Tube	100	100	25.96	23.80	25.10	31.02	25.02
UT011	33 High Street	Urban Centre	Diffusion Tube	100	100	34.35	30.63	32.90	38.57	30.97
UT012	Town Hall	Urban Background	Diffusion Tube	100	100	20.99	19.01	18.52	20.48	16.20

UT013/UT014/UT027	Fire Station Co-Located	Roadside	Diffusion Tube	100	100	23.77	22.10	21.44	25.84	21.32
UT024	Takeley Hill	Rural	Diffusion Tube	58	58	15.73	13.49	14.73	17.01	15.49
UT025	Elman's Green	Rural	Diffusion Tube	100	100	15.80	13.62	13.55	17.84	13.30
UT026	South Gate	Rural	Diffusion Tube	83	83	13.28	11.86	12.29	13.52	11.34
UT028	London Rd	Roadside	Diffusion Tube	92	92	**41.33**	35.01	37.96	**44.76**	37.44
UT029	Debden Road	Roadside	Diffusion Tube	100	100	26.51	25.04	21.58	26.50	21.41
UT030	Friends School	Kerbside	Diffusion Tube	92	92	29.75	27.16	29.01	35.27	26.10
UT031	Mount Pleasant Road	Roadside	Diffusion Tube	100	100	23.79	22.03	22.00	26.22	21.38
UT032	Borough Lane	Roadside	Diffusion Tube	100	100	19.51	16.92	16.79	19.71	17.36
UT033	Chapel Hill	Roadside	Diffusion Tube	100	100	29.79	26.91	27.61	36.18	26.99
UT034	Four Ashes	Roadside	Diffusion Tube	100	100	N/A	26.41	26.08	35.15	29.79
UT036	Church Street	Urban Centre	Diffusion Tube	100	100	N/A	22.24	21.63	27.09	20.87
UT037	Castle Street	Kerbside	Diffusion Tube	100	100	N/A	25.73	24.19	29.08	23.97
UT038	Oak Cottage HBO	Kerbside	Diffusion Tube	100	100	N/A	N/A	21.25	25.80	22.44
UT039	Newport High Street	Roadside	Diffusion Tube	100	33	N/A	N/A	N/A	N/A	31.35

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

☒ **Annualisation has been conducted where data capture is <75%**

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.**

(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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

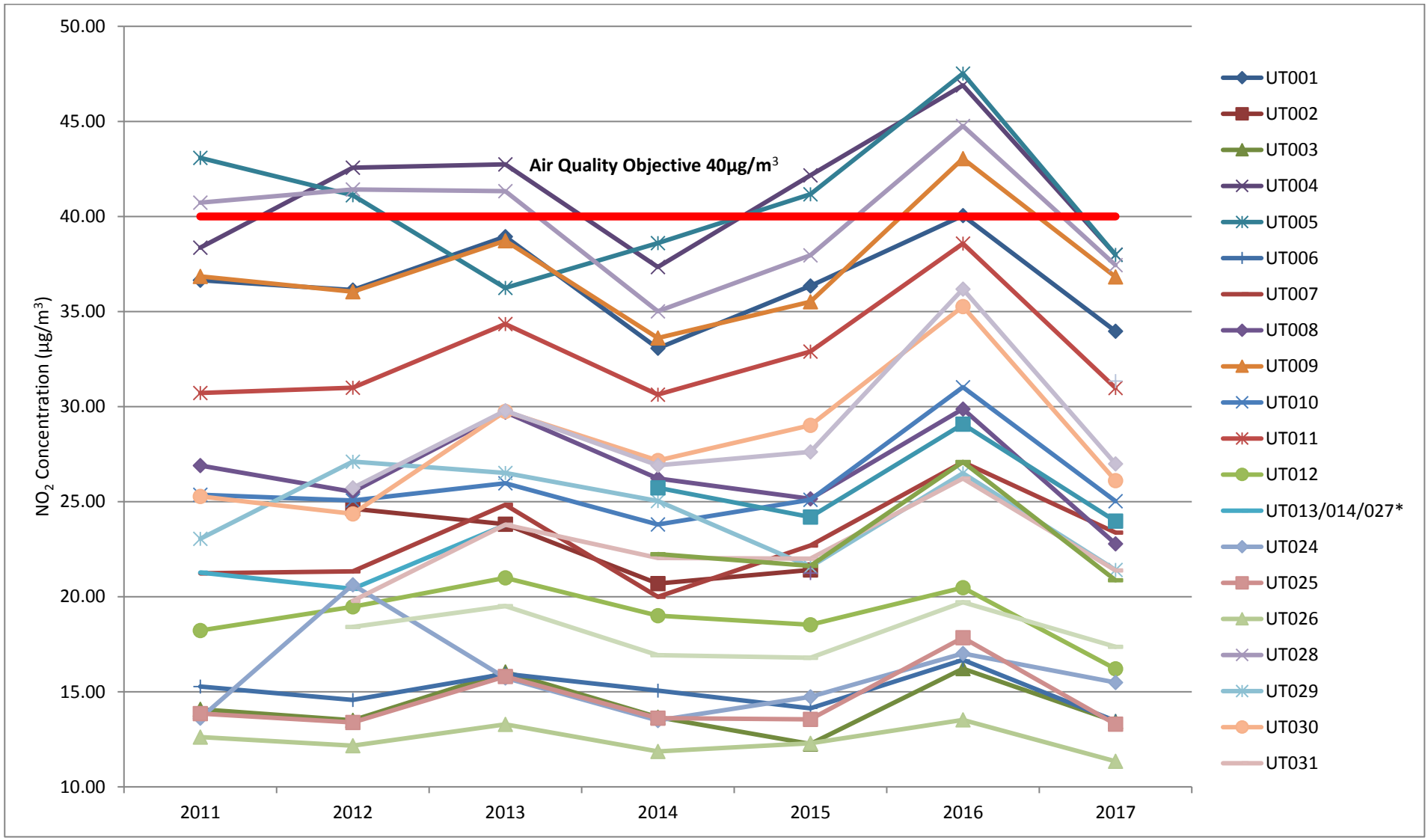


Table A.4 – 1-Hour Mean NO2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 1-Hour Means > 200µg/m³ (3)				
					2013	2014	2015	2016	2017
UTT1	Roadside	Automatic	0	0	0	0	0 (78.91)	1	N/A
UTT3	Roadside	Automatic	89.16	89.16	N/A	N/A	N/A	0 (133.57)	1

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold.**

(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%).

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

Table A.5 – Annual Mean PM10 Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} Annual Mean Concentration (µg/m³) (3)				
				2013	2014	2015	2016	2017
UTT3	Roadside	96.71	96.71	N/A	N/A	N/A	24.5	24.18

Notes:

Exceedances of the PM_{10} annual mean objective of 40µg/m³ are shown in **bold.**

(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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.6 – 24-Hour Mean PM10 Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} 24-Hour Means > 50µg/m³ (3)				
				2013	2014	2015	2016	2017
UTT3	Roadside	96.71	96.71	N/A	N/A	N/A	6 (43.47)	19

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold.**

(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%).

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

Table A.7 – PM2.5 Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	$PM_{2.5}$ Annual Mean Concentration (µg/m³) (3)				
				2013	2014	2015	2016	2017
UTT1	Roadside			N/A	19.6	19.3	17.27	18.45

☐ **Annualisation has been conducted where data capture is <75%**

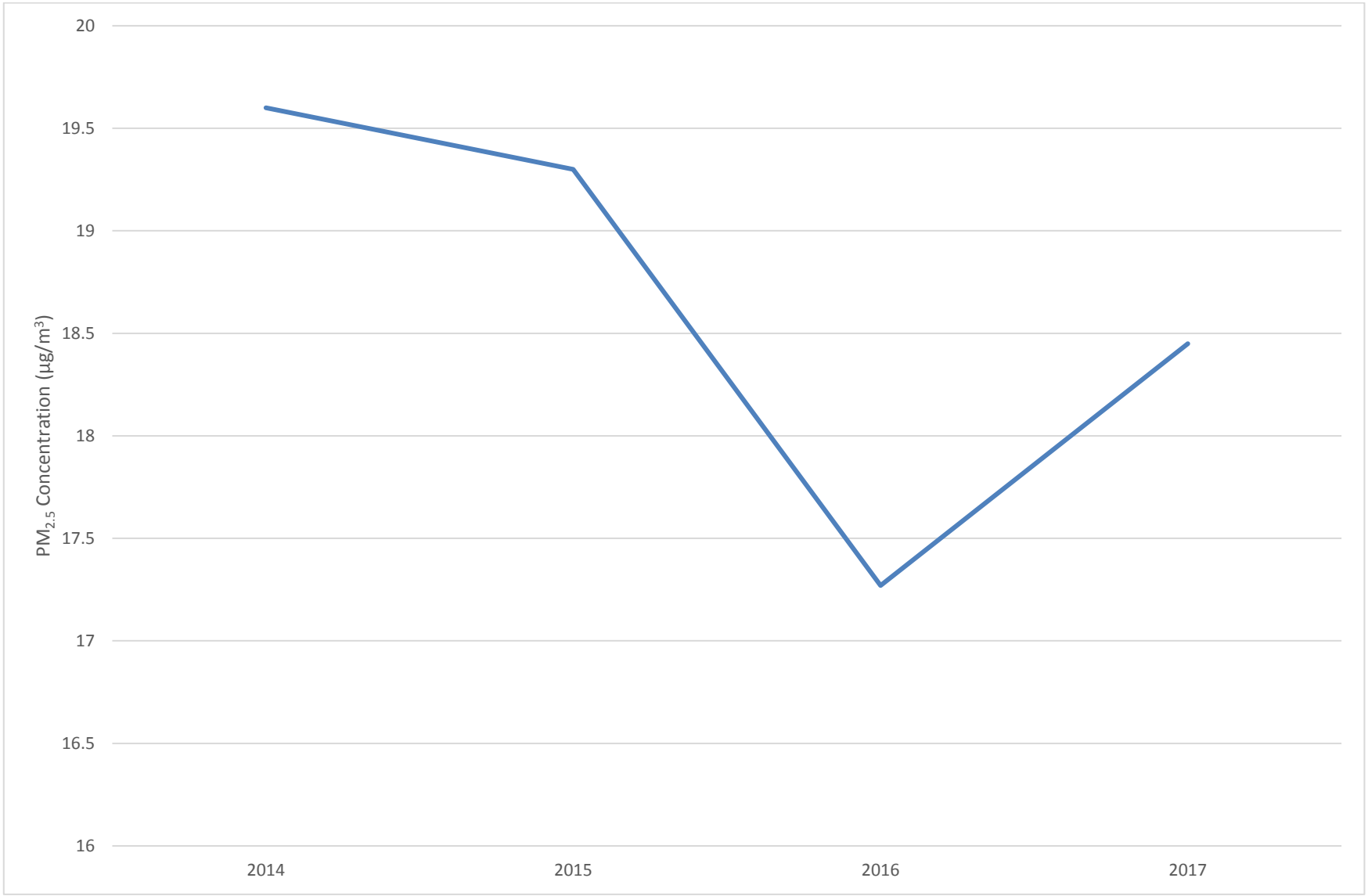
Notes:

(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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.2 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO2 Monthly Diffusion Tube Results - 2017

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.77) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
UT001	67.7	Missing	Missing	42.8	39.6	36.5	35.8	36.6	42.1	43.0	54.4	42.6	44.11	33.96	21.31
UT002	40.9	30.2	29.5	25.6	20.0	Missing	Missing	Missing	15.3	24.0	34.6	28.7	27.64	21.29	21.11
UT003	31.1	24.7	20.5	12.8	12	Missing	9	9.8	13.7	16.5	22.8	19	17.45	13.43	12.29
UT004	63.4	52.1	49.6	46.6	45.1	44.2	38.3	41.4	49.7	51.5	58.4	51.9	49.35	38.00	32.75
UT005	Missing	51.5	55.2	50	46.4	45.3	43	41.8	43.7	52.3	59.6	53.8	49.33	37.98	29.66
UT006	33.8	22.7	19.7	13.9	12.9	11.4	8.7	13.4	14.3	17.9	21.1	20	17.48	13.46	13.46
UT007	45.6	32.1	30.1	28.4	22.3	23.3	22.6	26.6	27.4	30.1	40.1	35.7	30.36	23.38	23.38
UT008	55.3	30.3	33.1	24.6	31.2	25.1	23.5	24	25.7	24.2	Damaged	28.5	29.59	22.79	17.31
UT009	63.4	51.4	48.8	50.9	42.1	37	38.5	45.4	41.1	48.2	51.8	55.2	47.82	36.82	30.59
UT010	45.3	25.3	41.1	36.4	26.9	27	26.6	28.5	29.6	34.6	39.5	29.1	32.49	25.02	15.83
UT011	55.5	37.1	44.3	45.6	34.5	33.6	36.3	33.6	35.6	35.8	46.3	44.5	40.23	30.97	30.97
UT012	38.3	22.3	22.1	17.8	17.1	14.3	15	16.8	19.4	21.4	26.1	21.9	21.04	16.20	11.62
UT013	50.7	36.6	35.3	27.2	23.3	17.8	18.2	16.8	21.5	26.3	34.1	33.6	28.45	21.91	15.29
UT014	50.4	37.2	34.4	26.2	23.4	17.2	18.4	16.5	21.1	25.1	32.4	30.1	27.70	21.33	15.03
UT024	Missing	21.9	36.5	14.5	Missing	Missing	10.8	Missing	Missing	17.4	22.9	16.8	20.11	15.49	15.49
UT025	30.7	21.7	19.9	14.9	13.9	8.9	11.1	12.8	14.4	16.7	23	19.2	17.27	13.30	13.30

UT026	Damaged	19.5	18.1	11.9	10.2	Damaged	9.1	13.9	12.9	17.2	17	17.5	14.73	11.34	11.34
UT027	47.4	34.9	34.3	23.2	22.2	16.8	18	18.1	22	25.4	27.8	32.8	26.91	20.72	14.76
UT028	70.5	53.8	51.7	46.2	39.1	38.9	40.6	40.3	43.5	49.1	61.1	Missing	48.62	37.44	35.27
UT029	48.8	31	29.9	27.3	24.1	20.1	18.5	20.4	27.1	29.1	33	24.3	27.80	21.41	20.00
UT030	56.2	Missing	39.7	29.2	35.5	26.8	23.8	27.2	30.9	30.5	40.4	32.7	33.90	26.10	17.26
UT031	48.8	23.7	32.9	21.7	24.6	19.6	20.1	20.6	25.9	28.6	35	31.7	27.77	21.38	19.15
UT032	63.8	23.8	27.1	17.1	15.9	11.3	12.8	13.4	16.2	19	25.7	24.5	22.55	17.36	17.36
UT033	46.8	38.8	40	36.8	33.6	28.8	28.6	30.2	31.6	32.6	41.5	31.3	35.05	26.99	26.99
UT034	64.6	42.8	42.7	31.8	31.3	31.8	28.4	33.8	35	39.1	48.2	34.7	38.68	29.79	22.04
UT036	45.7	29.5	32.8	24.5	21.1	19.3	22	21.4	25.1	28.2	28.4	27.2	27.10	20.87	20.87
UT037	53.3	37.7	34.9	24.6	26.6	22.8	22.7	20.9	27	27.6	38.9	36.6	31.13	23.97	22.01
UT038	49.7	33.7	32.4	26.2	24.5	20.4	20.6	25.2	27.6	28.2	30.6	30.6	29.14	22.44	22.44
UT039	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36.3	35.4	40	40.5	38.05	31.35	31.35

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **Where applicable, data has been distance corrected for relevant exposure**

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.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

In 2017, Uttlesford District Council operated two automatic monitoring stations and monitored for NO_2, PM_{10} and $PM_{2.5}$.

The monitoring assets consist of two chemiluminescence ($NO/NO_2/NO_x$) gas analysers, one Met One BAM PM_{10} analyser and one Met One Smart Heated BAM $PM_{2.5}$ analyser.

Analysers are serviced in-line with manufacturer guidelines biannually. NO_2 analysers have a LSO calibration fortnightly to check against a certified calibration gas bottle.

Data has been ratified according to LAQM TG16 procedures to identify erroneous data and to account for instrument drift.

For Nitrogen Dioxide, the calibration and ratification process corrected the raw dataset for any drift in the zero baseline and upper range of the instrument. This was carried out using a Enviman Reporter software based process that incorporates zero and span check information from the calibration visits.

The Met One PM_{10} measurements are corrected for slope by dividing the data by 1.2.

The Met One $PM_{2.5}$ measurements are not adjusted due to the presence of the smart heater.

Diffusion Tubes QA/QC

In 2017, Uttlesford District Council undertook monitoring with 29 nitrogen dioxide diffusion tubes at 27 sites.

The diffusion tubes were supplied by Environmental Scientifics Group (ESG Didcot) (UKAS Testing Laboratory number 1015) with a preparation method of 50% triethanolamine (TEA) in Acetone.

The AIR NO2 proficiency testing scheme found that the laboratory achieved the following percentage of results determined as satisfactory for 2017:

Table C.1 – AIR PT Results 2017

AIR PT Round	AIR PT AR018	AIR PT AR019	AIR PT AR021	AIR PT AR022
Round conducted in the period	January – February 2017	April – May 2017	July – August 2017	September – October 2017
ESG Didcot	100%	100%	100%	100%

Diffusion Tube Bias Adjustment Factors

Due to issues with the data quality at the Hill Street, Saffron Walden monitoring site, no results are being reported for 2017 so it is not possible to generate a local bias adjustment factor for Saffron Walden.

Using the Diffusion Tube Bias Adjustment Factors Spreadsheet 03/18 identified that for ESG (Didcot) 50% TEA in acetone diffusion tubes in 2017, a bias adjustment factor of 0.77 should be used. This was derived from orthogonal regression analysis of 27 studies.

Point Sources

No significant new point sources of emissions have been identified.

NO_2 Fall Off Estimation

Diffusion tube monitoring shown in Table B.1 in Appendix B has been adjusted for NO_2 falloff between the monitoring location and the point of relevant exposure.

Using the equation from the Air Quality Consultants 'NO_2 Concentrations and Distance from Roads (2008)' report a custom Excel spreadsheet has been developed to derive the NO_2 concentrations at relevant exposure from the measured annual mean concentrations and using 2017 NO_2 background maps.

Estimated Annual Mean at Relevant Exposure:

Cz = ((Cy-Cb) / (-0.5476 x Ln(Dy) + 2.7171)) x (-0.5476*Ln(Dz)+2.7171) + Cb
Where:
Cz is the total predicted concentration (µg/m^3) at distance Dz;
Cy is the total measured concentration (µg/m^3) at distance Dy;
Cb is the background concentration (µg/m^3);
Dy is the distance from the kerb at which concentrations were measured;
Dz is the distance from the kerb (m) at which concentrations are to be predicted; and
Ln(D) is the natural log of the number D

Appendix D: Maps of Monitoring Locations and AQMA

Figure D.1 – Saffron Walden AQMA and Monitoring Locations

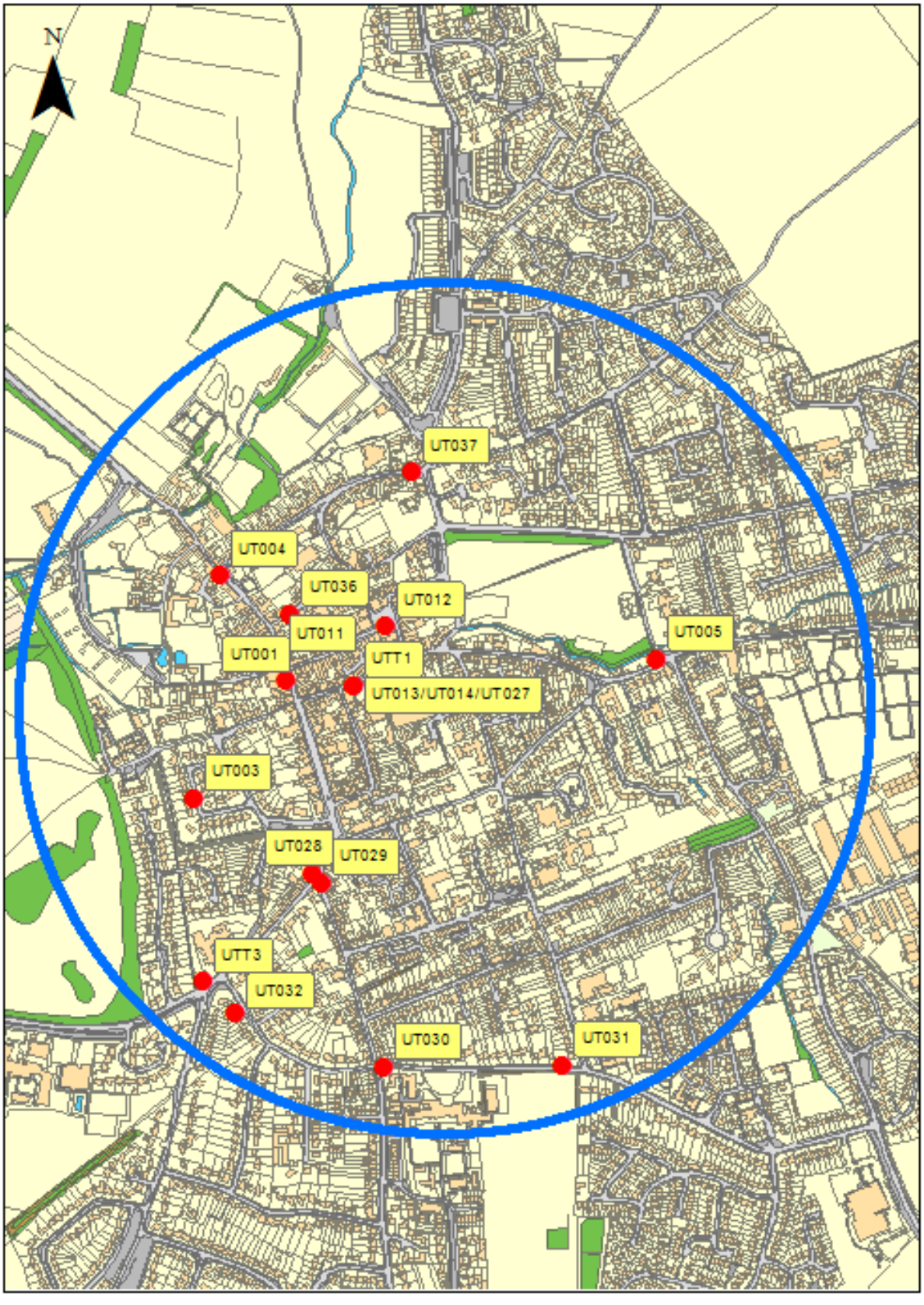


Figure D.2 – Newport Monitoring Locations

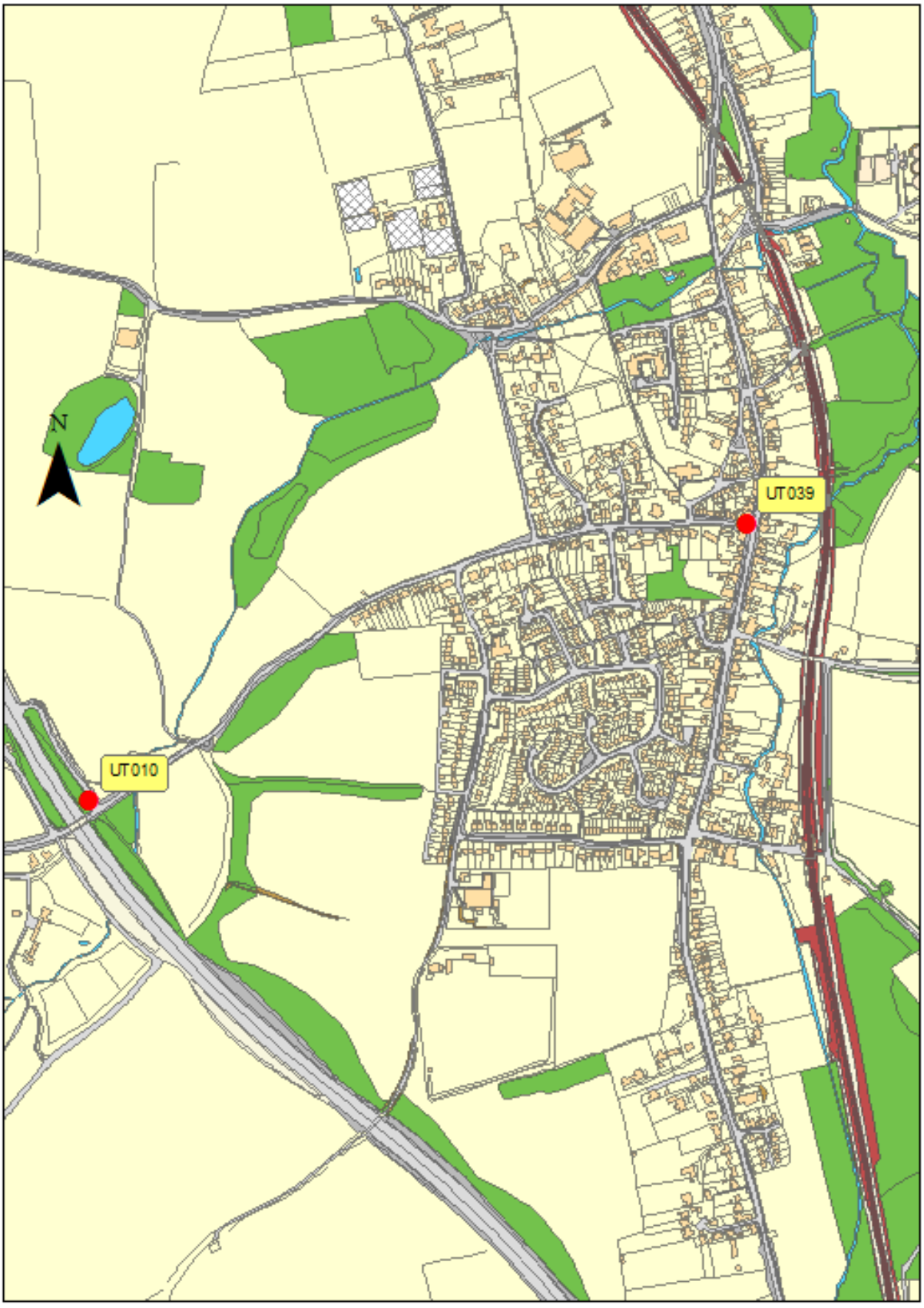


Figure D.3 – Other Monitoring Locations

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Glossary of Terms

Abbreviation	Description
µg/m^3	Micrograms per cubic metre
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	Air Quality Annual Status Report
BAM	Beta Attenuation Monitors
Biomass	Biomass is an industry term for getting energy by burning wood, and other organic matter
CHP	Combined Heat and Power
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
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
STOR	Short Term Operating Reserve
QA/QC	Quality Assurance and Quality Control

References

Air Quality Consultants (AQC) NO_2 Concentrations and Distance from Roads (2008) available at; https://laqm.defra.gov.uk/documents/FallOffWithDistanceReptJuly08.pdf

Defra Diffusion Tube Bias Adjustment Factors Spreadsheet available at; https://laqm.defra.gov.uk/assets/Database_Diffusion_Tube_Bias_Factors_v03_18%20FINAL.xls

Defra PG.16 Air Quality Policy Guidance available at; https://laqm.defra.gov.uk/documents/LAQM-PG16-April-16-v1.pdf

Defra TG.16 Air Quality Technical Guidance available at; https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf

Essex Air Twitter Feed available at; https://twitter.com/essexair

EssexCarShare.com available at; https://essex.liftshare.com/

Essex County Council Local Transport Plan available at; http://www.essexhighways.org/Transport-and-Roads/Highway-Schemes-and-Developments/Local-Transport-Plan.aspx

Essex County Council Major Schemes available at; http://www.essexhighways.org/highway-schemes-and-developments/major-schemes.aspx

National Air Quality Objectives and European Directive Limit and Target Values for the Protection of Human Health available at; https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf

Public Health Outcomes Framework Indicator 3.01 available at; http://www.phoutcomes.info/

UK-AIR Background Mapping Data for Local Authorities available at; https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015

Uttlesford District Council Air Quality Technical Planning Guidance available at; http://www.uttlesford.gov.uk/CHttpHandler.ashx?id=8250&p=0

Uttlesford District Council Regulation 19 Local Plan available at; https://www.uttlesford.gov.uk/CHttpHandler.ashx?id=8248&p=0