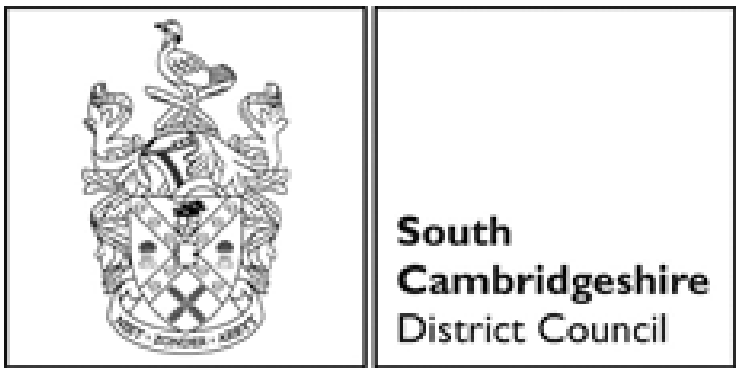


2023 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: August 2023 (Revision A)

Information	South Cambridgeshire District Council Details
Local Authority Officer	Peter Gibson
Department	Environmental Health
Address	South Cambridgeshire Hall Cambourne Business Park Cambourne, Cambridgeshire CB23 6EA
Telephone	01954 713000
E-mail	air.quality@scambs.gov.uk
Report Reference Number	SCDC 2023 ASR
Date	August 2023 (Revision A)

Executive Summary: Air Quality in Our Area

Air Quality in South Cambridgeshire District Council

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].

South Cambridgeshire District Council (SCDC) is a rural district with good rail and road links to London and South-East, including the A14 and M11/A11 corridors which benefits from good air quality. The only Air Quality Management Area (AQMA) was declared along the A14 between Bar Hill and Milton in 2008 was revoked in 2022 owing to consistent air quality improvements in that area.

Following the revocation of the AQMA, a new Air Quality Strategy[5] has been approved setting out a new approach to monitor air quality across the district and to identify potential hotspots.

Given that future developments in the district are mainly residential and reliant on road-based transport for travel, there is a potential for cumulative impacts on local air quality. This strategy outlines three focussed actions to ensure that:

1. air quality is monitored and understood district wide and appropriate measures are introduced to meet air quality objectives,

---

[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

[5] South Cambridgeshire District Council 2021 Air Quality Strategy

2. policies are in place to minimise impacts from future developments and
3. public engagement is aimed at increasing local knowledge and supporting better choices in reducing daily impact on air quality.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan[6] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[7] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The key actions undertaken or underway to monitor and improve air quality are summarised here:

- The Council's Air Quality Strategy has been approved and continues to be implemented. The Strategy outlines a new approach to monitor and improve the air quality across the district and to ensure both the new and existing communities are considered to benefit a better air quality district wide.
- A review of the monitoring network has been completed, focusing on the areas of future major development in the district. As the result, the monitoring network has been updated with new diffusion tubes, new automatic continuous monitors and new indicative real-time Zephyr monitors.
- Two new automatic continuous monitors are now operational in new locations of areas of high predicted growth i.e., Northstowe and Harston in 2022. This will allow

[6] Defra. Environmental Improvement Plan 2023, January 2023

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

the Council to establish a new continuous monitoring network across the district. The existing network is likely to be subject to relocation or decommissioning in line with the new Air Quality Strategy as areas of predicted growth are considered.

- A hotspot monitoring initiative is carried out using indicative real-time monitors (Zephyrs). The aim of this initiative is to conduct targeted studies such as monitoring air quality near schools and different areas of concern e.g., idling vehicles or areas of prevalent use of solid fuel appliances. Details of these studies are made available via a report after a minimum of 6-months operation and have engaged local communities.

Further consideration has been given to air quality and its improvement across the district, in line with the Council's key objective to 'Being green to our core'[8]. The supporting actions are summarised here:

- Electric vehicle charging points were installed at our Waterbeach depot as well as South Cambridgeshire Hall, which has also undertaken work to install a ground source heat pump to replace the need for gas.
- Our first electric refuse vehicle was purchased in 2020 and is in operation. This has now been increased to 3 electric vehicles. In addition to the electric option the service is also investigating other options such as hydrotreated vegetable oil (HVO) as the solution to reducing our CO_2 impact to the environment.
- Our Zero Carbon Action Plan 2020-25 outlines the actions we are taking to reduce carbon emissions from our own estate and operations by 45% on a 2018-19 baseline by 2025 and how we are supporting the district to reach net zero[9].
- Our Zero Carbon Communities Grant[10],scheme funds community initiatives to improve sustainability.

[8] Being green to our core

[9] Zero Carbon Strategy

[10] Zero Carbon Communities Grant

Conclusions and Priorities

The review of the monitoring data in 2022 has identified the following:

- No exceedances of any of the national air quality objectives were reported at any of the monitoring locations.
- Whilst there has been a slight increase or equivalent levels in concentrations to the previous year seen at some monitoring locations, these are still below pre pandemic levels.
- There continues to be no exceedances of any objectives at any of the sites in the AQMA which is now revoked.
- Low data capture was reported for several diffusion tubes. However, sufficient data was available to allow annualisation for the majority of these sites.
- Data capture for the automatic continuous monitors required annualisation for the Girton site for nitrogen dioxide and particulates and just particulates for Impington and Orchard Park.
- New monitors have been installed at areas of predicted growth. These monitors will be reported on in future years and support the justification for the decommissioning of future real time monitors owing to the historic low levels of air pollution.
- No new sources of pollution have been identified.

Local Engagement and How to get Involved

Previous Annual Status Reports and details on air quality monitoring are available on our website[11] and you can share your views via our email address air.quality@scambs.gov.uk and follow our Facebook page[12] for general updates and news. The website contains a link to live data from our continuous monitor locations and a link to data from the Zephyr monitors is due to go live soon. Ways you can help to improve air quality in South Cambridgeshire include:

- Minimise car use wherever possible:
    - Avoid using your car for short trips (under 2 miles) – short trips are very polluting as modern engines need to reach a very high temperature to work efficiently; on short trips it won't reach that temperature.

[11] SCDC Local Air Quality Management

[12] SCDC Facebook

  - For short journeys try cycling or walking more often – this helps you stay healthy and saves you money in fuels costs.
  - For longer journeys consider public transport options.
  - Use journey-planning apps such as MyBusTrip or MotionMap for travel by bus, train, walking and cycling.
- Switch it off – don't leave your car engine idling if you are stationary e.g. waiting to pick someone up, in a traffic jam or waiting at level crossings.
- When driving, use techniques that help you use less fuel, like driving more slowly and smoothly.
  - You could use 10% less fuel by following the tips on the AA website
  - Like switching your engine off when stationary, this will not only reduce your emissions of air pollution but will save fuel and therefore money too!
- Consider making your next vehicle an electric vehicle.
- Join a car club or car-share regularly.
- Consider working at home where possible – the first Covid-19 lockdown showed widespread improvements in the air quality as the amount people travelled reduced.
- Use less energy at home – consider a smart meter to monitor usage and be aware of boiler standards.
- Opt for 'green energy' tariffs where available or switch to renewable sources of heating or power.
- Reduce the use of solid fuel stoves and open fires – domestic burning is now the single biggest source of particulate matter pollution in the UK (greater than traffic and industry).
  - If you are burning wood or coal ensure any fuel used meets the new standards of moisture content and emissions. Find more information
- Improve indoor air quality by ensuring adequate ventilation through opening windows, especially when cooking or cleaning, as these activities produce pollutants.

Make your children aware of the impact that day to day activities have on air quality.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of South Cambridgeshire District Council. If you have any comments on this ASR please send them to: Environmental Health - Air Quality

Address: South Cambridgeshire Hall, Cambourne Business Park, Cambourne, Cambridgeshire, CB23 6EA

Telephone: 01954 713640

Email: air.quality@scambs.gov.uk

This ASR has been approved by the Head of Climate, Environment & Waste for South Cambridgeshire District Council.

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in South Cambridgeshire District Council during 20222. 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 South Cambridgeshire District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 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.

South Cambridgeshire District Council currently does not have any declared AQMAs. A local Air Quality Strategy is in place to prevent and reduce polluting activities. The Local Air Quality Strategy is available at Local air quality management - South Cambs District Council (scambs.gov.uk)

2.2 Progress and Impact of Measures to address Air Quality in South Cambridgeshire District Council

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the Guidance. We will continue to report this information in the same format.

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

South Cambridgeshire District Council's priorities for the coming year are in line with the Council's Air Quality Strategy. This strategy outlines three focussed actions to ensure that:

1. air quality is monitored and understood district wide and appropriate measures are introduced to meet air quality objectives,
2. policies are in place to minimise impacts from future developments and
3. public engagement is aimed at increasing local knowledge and supporting better choices in reducing daily impact on air quality.

Much focus will be on monitoring the effects of solid fuel appliances and providing education to local residents.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Low Emission Strategies	Policy Guidance and Development Control	Low Emissions Strategy	2019	2022	SCDC Environmental Health, GCP Planning Department	Developer contributions	N/A	N/A	N/A	Implementation	N/A	To be confirmed – May involve ratio of PPs issued with LES	In progress/ongoing - Low Emission Strategies required as per Local Plan and Supplementary Planning Document	
2	Guided Bus Way	Transport Planning and Infrastructure	Bus route improvements	2009	2011	Cambridgeshire County Council (CCC)	CCC	N/A	N/A	N/A	Completed	N/A	N/A	Completed	
3	A14 improvement - Junction 31-32 (EB & WB)	Traffic Management	Strategic highway improvements	2015	2015	CCC	CCC	N/A	N/A	N/A	Completed	N/A		Completed Autumn 2015	
4	A14/M11 re-alignment	Traffic Management	Strategic highway improvements	2016	2020	CCC/Highways England	CCC/Highways England	N/A	N/A	N/A	Completed	N/A	Central gov/Highways England Commitment	Completed 2020	
5	Policy Guidance and Development Control	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2015	2016	SCDC		N/A	N/A	N/A	Completed	N/A		SPD or Developers Guide for Low Emission Strategy measures	
6	City Deal	Transport Planning & Infrastructure and Promoting Travel Alternatives	Bus route improvements & Promotion of cycling/Sustainable Transport	2015	2015-2030	CCC/Cambridge City Council	CCC/Cambridge City Council	N/A	N/A	N/A	Implementation	N/A	Connect existing and new residential and employment areas with high quality public transport networks, including new orbital bus routes around Cambridge & comprehensive network of pedestrian and cycle route.	Continually ongoing Proposed scheme for making bus, cycle and walking journeys more convenient and safer from Northstowe announced.	Tranche 1 schemes by 2019

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

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

South Cambridgeshire District Council undertakes monitoring for $PM_{2.5}$ at four sites, three roadside sites at Girton, Northstowe and Harston and one urban background site at Orchard Park.

Furthermore, indicative real-time zephyr monitors are used for targeted hotspot monitoring, including monitoring $PM_{2.5}$. The main initiative has been to study air quality around primary schools as it is recognised that children are among the most vulnerable to the impacts of air pollution. Studies have been completed at Harston and Newton Community Primary School in Harston, Monkfield Park Primary School in Cambourne and Pathfinder C of E Primary School in Northstowe, Swavesey and Histon. The results are made available via a report on the council's website after a minimum of 6-months operation. The details of completed studies is available on the Council's website Air quality monitoring - South Cambs District Council (scambs.gov.uk)

Public Health England (PHE) reports the health impacts of Particulate Matter ($PM_{2.5}$) through the fraction of mortality attributable to particulate air pollution. This was reported as 5.4% for Cambridgeshire in 2019[13]. This is very similar to the East of England regional average of 5.5%, which is slightly above the national average for England of 5.1%.

The Council has participated in publicity campaigns both by Defra and locally highlighting the impacts of wood burning stoves on local air quality, which is now recognised as the biggest source of small particulate matter, providing information about what type of wood to burn and how to burn it efficiently[14]. In addition, Greater Cambridgeshire Partnership (GCP) is working on a network of twelve separate routes into Cambridge from surrounding towns and villages to increase the level of safe cycling and walking and to reduce traffic

[13] Public Health Outcome Framework
[14] Wood Burning Stoves Information

congestion[15]. Cambridgeshire County Council (CCC) elected members have also noted the impacts of poor air quality and have passed a resolution to work with different councils and other public bodies more collaboratively across Cambridgeshire.

In 2023, South Cambridgeshire District Council will be monitoring areas with a high prevalence of solid fuel appliances with a view to educating them on the affects (if identified) of emissions when utilised.

[15] Greenways Project information

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

South Cambridgeshire District Council undertook automatic (continuous) monitoring at three sites during 2022. The Automatic Monitoring Stations at Girton and Impington sites are representative of nearby receptors. The Orchard Park monitor is a background site located within the school grounds. Two new automatic monitoring sites became operational in 2023 and will be reported upon in future years.

Table A.1 in Appendix A shows the details of the automatic monitoring sites. The automatic monitoring results also available through the UK-Air website.

The data capture for the automatic monitoring sites are as follows:

- NO_2: Impington site 92.1%, Orchard Park site 89.9% and Girton site 36.2%.
- PM_{10}: Impington site 80.4%, Orchard Park site 62.3% and Girton site 34.5%.
- $PM_{2.5}$: Impington site 26.1% and Orchard Park site 72.4%.
  As a result, the Girton site data was annualised.

The monitoring results demonstrate that:

- No exceedances of the annual mean objective for NO_2 or PM_{10} were recorded.
- No exceedances of annual mean objective for $PM_{2.5}$ were recorded.
- The hourly mean objective for NO_2 hourly mean was achieved at all sites.
- The daily mean objective for PM_{10} was achieved at all sites.
- Whilst a slight increase or equivalent levels in concentrations to the previous year has been seen at all monitoring locations, these are still below pre pandemic levels.

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

South Cambridgeshire District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 28 sites during 2022, one of which was a triplicate site.

The monitoring network was updated in 2021 with these new locations in areas of concern and where no previous monitoring was undertaken. The new locations include Cambourne and Hardwick to the west of Cambridge, Teversham and Cherry Hinton to the East of Cambridge. These locations are listed below.

DT31 located on Church Road, Teversham.

DT32 located on Gazelle Way, Cherry Hinton.

DT33 located on Hudson Road, Upper Cambourne.

DT34 located on Jeavons Lane, Great Cambourne.

DT35 located on Swansley Lane, Lower Cambourne.

DT35 located on St Neots Road, Hardwick

Furthermore, the following locations were removed from the network during 2022 due to consistent low concentrations.

DT10 located on adjacent to the Co-op, Girton.

DT11 located at Heath House on the A505.

DT20 located on Chieftain Way, Orchard Park

DT23 located at Orchard Park Primary School.

The data capture for the diffusion tubes was generally good. Annualisation was required for a small number of sites, including some of the sites that were removed from the network. Other sites removed from the network did not have sufficient data to calculate an annual mean. The monitoring results demonstrate:

- No exceedance of any long-term or short-term objective at any monitoring site.

- Overall, the majority of sites had a slight decrease in concentrations to the previous year, although some had a slight increase. Where increases were seen these were still below pre pandemic levels.

Table A.2 in Appendix A presents the details of the non-automatic sites. Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

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.

There were no exceedances of any of the air quality objectives for NO_2 at any monitoring site in 2022. The maximum annual concentration measured was 19.9µg/m^3, recorded at the Gables, High Street, Histon.

Overall, a long term trend (i.e. over the past five years) of decreasing concentrations was observed at all monitoring sites.

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results 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.

Table A.7 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.

There were no exceedances of the annual mean air quality objectives for PM_{10} at any monitoring site in 2022. The maximum annual concentration measured in 2022 was 18 µg/m^3, recorded at the Impington site. The Impington site recorded two days where the daily mean of 50µg/m^3 was exceeded, which is significantly below the allowable 35 days.

Overall, the result are slightly higher or combarible to recent year's results, with no obvious long term trend in concentrations, but still well below objective concentrations.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

South Cambridgeshire District Council undertakes monitoring for $PM_{2.5}$ at two sites, one roadside site at Impington and one urban background site at Orchard Park. In 2022, these measured annual mean concentrations of 7.5 and 12.4 µg/m^3 respectively. This was the third year that data was available at the Orchard Park and it represents a slight increase in concentration compared to 2021. For Impington, the value of 7.5 µg/m^3 represents a significant decrease, however, it should be noted that the data capture was only 26% and although annualisation has taken place the result should still be treated with some caution.

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)
IMP	Impington (A14)	Roadside	543739	261625	NO_2, PM_{10}, $PM_{2.5}$	NO	Chemiluminescent; BAM	12	2	2
ORCH	Orchard Park Primary School (A14)	Urban Background	544558	261579	NO_2, PM_{10}, $PM_{2.5}$	NO	Chemiluminescent; BAM	1	N/A	2
GIRT	Girton	Roadside	542676	260667	NO_2, PM_{10},	NO	Chemiluminescent; BAM	5	5	2

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)
DT1	The Coppice, Impington	Urban Background	544230	262048	NO2	N	7.0	0.5	No	2.0
DT2	The Gables, High Street, Histon	Roadside	543770	263678	NO2	N	1.0	1.0	No	2.0
DT-28N	73 Cambridge Road, Milton	Roadside	547436	262295	NO2	N	15.0	2.0	No	2.0
DT4	96 High Street, Sawston	Urban Background	548600	249136	NO2	N	5.0	1.0	No	2.0
DT5	Rhadegund Farm Cottage, Bar Hill, A14	Roadside	538744	263640	NO2	N	1.0	18.0	No	2.0
DT-6N	22 High Street, Linton	Roadside	555942	246680	NO2	N	1.0	2.0	No	2.0
DT7	20 High Street, Tadlow	Roadside	528131	247399	NO2	N	10.0	1.0	No	2.0
DT-8N	47 High Street, Harston	Roadside	542555	251001	NO2	N	5.0	2.0	No	2.0
DT9	3 Garner Close, Milton	Urban Background	547452	263175	NO2	N	5.0	1.0	No	2.0
DT10	1A Weavers Field, opp. Co-op, Girton	Urban Background	542537	261467	NO2	N	20.0	1.0	No	2.0
DT11	Heath House, A505, Thriplow	Urban Background	544034	244585	NO2	N	15.0	2.0	No	2.0
DT12	Lone Tree Avenue, Impington	Roadside	544119	261862	NO2	N	7.0	1.0	No	2.0

DT13	1 Brook Close, Histon	Urban Background	543955	263588	NO2	N	2.0	1.0	No	2.0
DT14	22 Water Lane, Histon	Roadside	544050	263306	NO2	N	2.0	2.0	No	2.0
DT15	72 Cambridge Road, Impington	Urban Background	544243	261819	NO2	N	7.0	1.0	No	2.0
DT17	5 Mill Lane, Sawston	Roadside	548545	249366	NO2	N	6.0	1.0	No	2.0
DT-32N	Banworth Lodge, Ely Road, A10	Roadside	548742	264698	NO2	N	8.0	7.0	No	2.0
DT20	Chieftain Way, Orchard Park	Roadside	544828	261738	NO2	N	4.0	0.5	No	2.0
DT21	Neal Drive, Orchard Park	Roadside	545056	261784	NO2	N	7.0	0.5	No	2.0
DT22	Flack End, Orchard Park	Roadside	545435	261906	NO2	N	7.0	35.0	No	2.0
DT23a, DT23b, DT23c	Orchard Park Primary School	Urban Background	544557	261571	NO2	N	1.0	50.0	Yes	2.0
DT26	Co-op, High Street, Histon	Roadside	543768	263708	NO2	N	1.0	4.5	No	2.0
DT27	Engledow Drive, Orchard Park	Urban Background	545259	261873	NO2	N	2.0	4.5	No	2.0
DT28	22 Topper Street, Orchard Park	Roadside	545169	261764	NO2	N	4.0	0.5	No	2.0
DT29	Church Lane, Little Abington	Urban Background	552961	249251	NO2	N	14.0	2.0	No	2.0
DT-30N	63 Denny End Road,Waterbeach	Roadside	549154	266006	NO2	N	7.0	2.0	No	2.0
DT31	Church Road, Teversham	Roadside	549457	258573	NO2	N	14.0	1.5	No	2.0

DT32	Gazelle Way, Cherry Hinton	Roadside	549406	257551	NO2	N	18.0	2.0	No	2.0
DT33	Hudson Road, Upper Cambourne	Urban Background	533359	259765	NO2	N	7.0	2.0	No	2.0
DT34	Jeavons Lane, Great Cambourne	Roadside	532092	259086	NO2	N	6.0	1.0	No	2.0
DT35	Swansley Lane, Lower Cambourne	Roadside	531247	259475	NO2	N	17.0	1.0	No	2.0
DT36	55 St Neots Road	Roadside	538122	259523	NO2	N	20.0	3.0	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 NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

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
IMP	543739	261625	Roadside	92.13	92.13	19	16	13	16	16
ORCH	544558	261579	Urban Background	89.86	89.86	14	15	11	11	12
GIRT	542676	260667	Roadside	36.18	36.18	18	17	12	12	13.4

☒ **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 NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

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
DT1	544230	262048	Urban Background	0	0	14.7	14.7	11.4	10.5	-
DT2	543770	263678	Roadside	100	100	27.1	27.2	19.7	21.1	19.9
DT-28N	547436	262295	Roadside	92.3	92.3	22.8	23.0	18.8	17.3	15.1
DT4	548600	249136	Urban Background	92.3	92.3	24.7	23.0	16.5	17.0	17.1
DT5	538744	263640	Roadside	38.5	38.5	19.4	13.4	10.8	12.2	12.1
DT-6N	555942	246680	Roadside	67.3	67.3	20.2	21.0	15.1	16.5	15.8
DT7	528131	247399	Roadside	0	0	8.6	10.2	8.5	7.8	-
DT-8N	542555	251001	Roadside	100	100	17.3	15.3	12.3	13.1	13.0
DT9	547452	263175	Urban Background	84.6	84.6	14.4	15.5	13.3	12.0	12.8
DT10	542537	261467	Urban Background	100	15.4	25.8	19.0	15.4	16.5	-
DT11	544034	244585	Urban Background	100	7.7	24.9	22.5	15.0	16.9	-
DT12	544119	261862	Roadside	84.6	84.6	15.1	16.3	12.7	12.2	11.9
DT13	543955	263588	Urban Background	100	100	17.2	16.3	11.5	12.1	12.7

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
DT14	544050	263306	Roadside	92.3	92.3	23.6	22.3	20.2	17.1	17.7
DT15	544243	261819	Urban Background	92.3	92.3	17.5	18.5	13.4	11.9	11.7
DT17	548545	249366	Roadside	0	0	13.1	13.8	10.4	12.2	-
DT-32N	548742	264698	Roadside	75	75	23.4	21.6	19.0	15.3	16.9
DT20	544828	261738	Roadside	100	7.7	23.2	14.7	13.9	13.6	-
DT21	545056	261784	Roadside	0	0	16.7	15.8	12.9	13.1	-
DT22	545435	261906	Roadside	67.3	67.3	17.5	15.9	13.3	13.5	14.2
DT23a, DT23b, DT23c	544557	261571	Urban Background	73.3	34.6	16.3	-	10.6	10.5	10.6
DT26	543768	263708	Roadside	100	100	17.8	17.1	13.2	13.2	13.1
DT27	545259	261873	Urban Background	0	0	17.9	16.8	13.5	13.3	-
DT28	545169	261764	Roadside	100	100	16.6	16.7	14.1	13.9	13.5
DT29	552961	249251	Urban Background	100	100	10.0	10.9	8.4	7.8	8.0
DT-30N	549154	266006	Roadside	100	100	16.0	-	12.2	12.1	12.3
DT31	549457	258573	Roadside	100	100	-	-	-	14.0	12.3

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
DT32	549406	257551	Roadside	90.4	90.4	-	-	-	14.6	14.4
DT33	533359	259765	Urban Background	100	100	-	-	-	10.7	9.2
DT34	532092	259086	Roadside	100	100	-	-	-	12.3	10.3
DT35	531247	259475	Roadside	92.3	92.3	-	-	-	11.5	11.2
DT36	538122	259523	Roadside	90.4	90.4	-	-	-	12.3	12.0

☒ **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**.

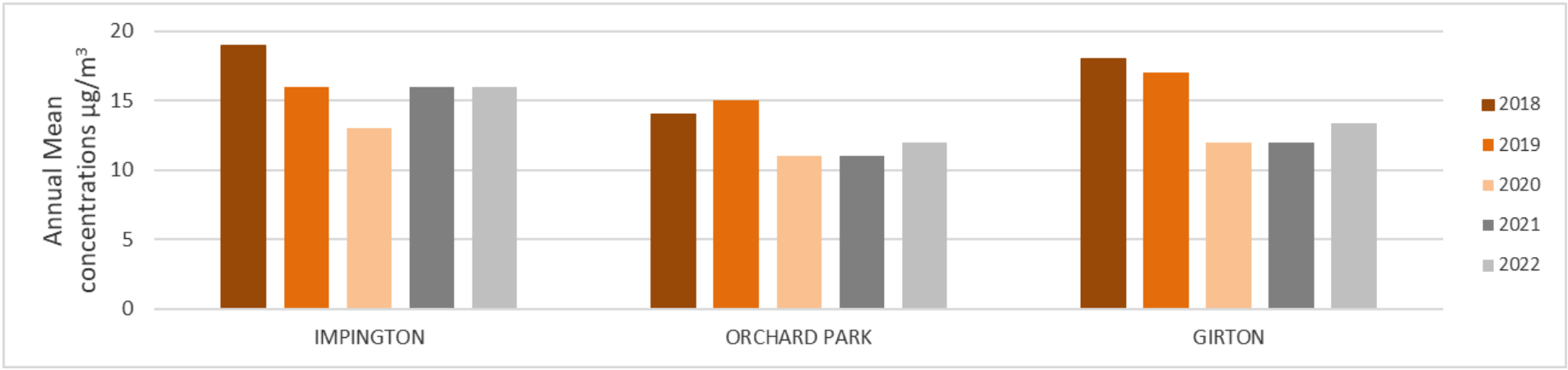
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

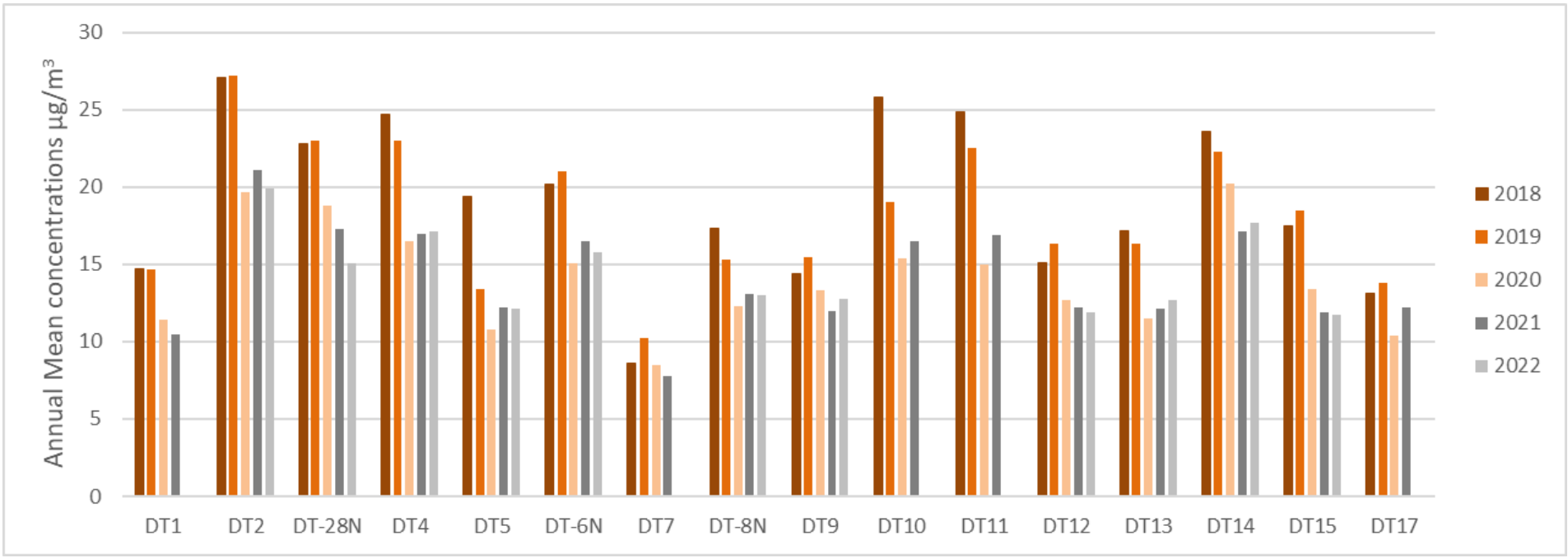
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations





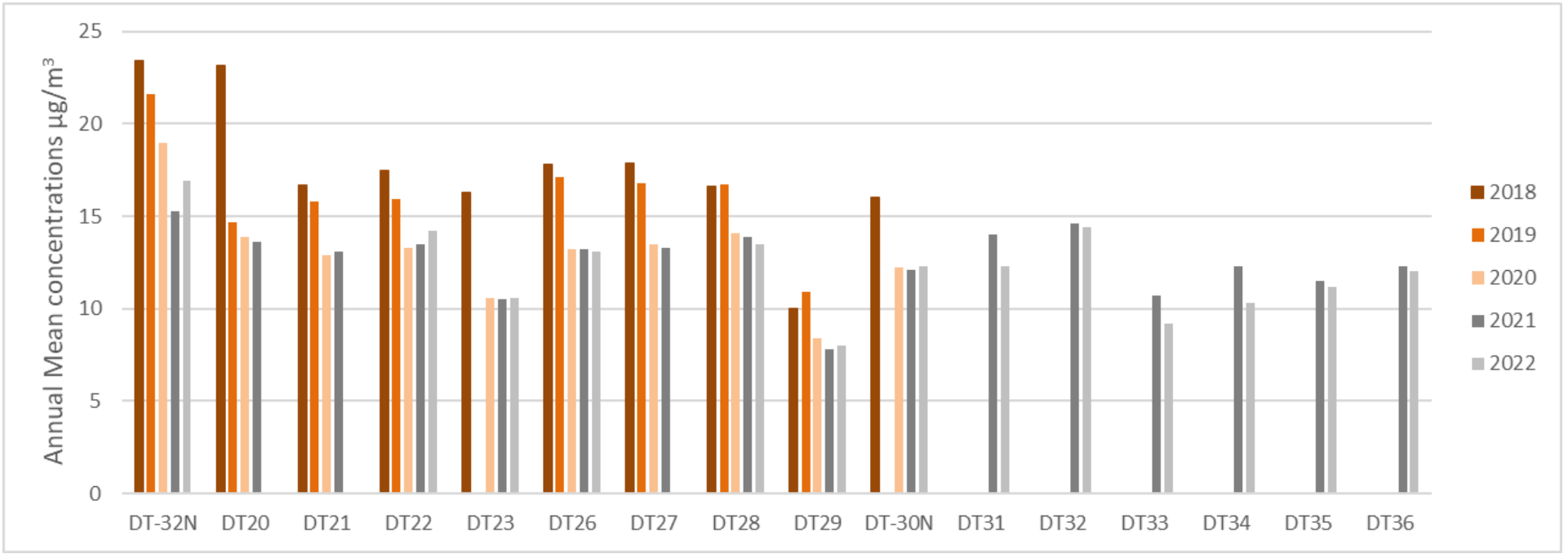

Annual Mean concentrations µg/m³
25
20
15
10
5
0
DT-32N
DT20
DT21
DT22
DT23
DT26
DT27
DT28
DT29
DT-30N
DT31
DT32
DT33
DT34
DT35
DT36
2018
2019
2020
2021
2022

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2018	2019	2020	2021	2022
IMP	543739	261625	Roadside	92.13	92.13	0	0	0	0	0
ORCH	544558	261579	Urban Background	89.86	89.86	0	0	0	0	0
GIRT	542676	260667	Roadside	36.18	36.18	0	0	0	0	0 (65)

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 PM_{10} Monitoring Results ($\mu g/m^3$)

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
IMP	543739	261625	Roadside	80.37	80.37	17	16	15	15	18.0
ORCH	544558	261579	Urban Background	62.32	62.32	14	14	12	12	12.8
GIRT	542676	260667	Roadside	34.5	34.5	17	17	14	15	15.0

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

Notes:

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

Exceedances of the PM_{10} annual mean objective of $40\mu g/m^3$ 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%).

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations

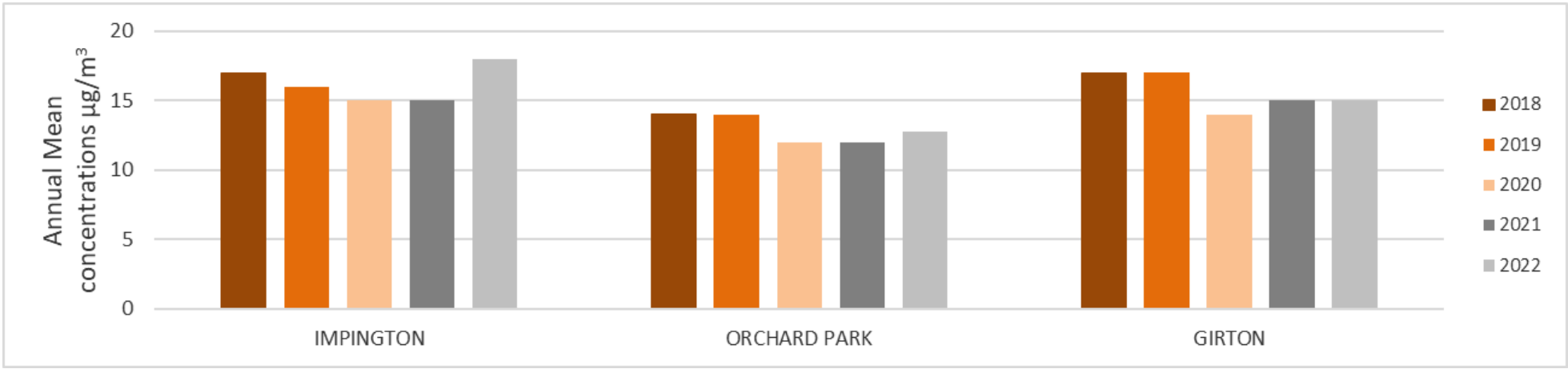


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2018	2019	2020	2021	2022
IMP	543739	261625	Roadside	80.4	80.4	1	2	0 (22)	0	2 (28)
ORCH	544558	261579	Urban Background	62.3	62.3	1	1	0	0	0 (26)
GIRT	542676	260667	Roadside	34.5	34.5	1	3	0	0 (22)	0 (19)

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 $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

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
ORCH	544558	261579	Urban Background	72.4	72.4	-	-	13	12	12.4
IMP	542676	260667	Roadside	26.1	26.1	11	11	10	13	7.5

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

Notes:

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

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 – NO_2 2022 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT2	543770	263678	40.3	32.0	30.7	21.7	25.5	13.3	23.3	21.2	25.7	26.3	27.7	27.0	26.2	19.9	-	
DT-28N	547436	262295	39.6	28.9	15.7	15.8	18.6	9.7	15.2	10.3	17.8	22.1		25.4	19.9	15.1	-	
DT4	548600	249136	33.5	23.9	26.9	23.5	17.7	9.2	18.3	19.5	23.8	23.1		27.9	22.5	17.1	-	
DT5	538744	263640	16.6	11.3					13.5	20.1	16.8				15.7	12.1	-	
DT-6N	555942	246680	33.7	25.5	24.3	16.2			22.7		23.2	20.8		22.2	23.6	15.8	-	
DT-8N	542555	251001	25.1	16.0	24.8	16.4	11.7	11.7	12.8	16.9	16.2	16.5	16.6	21.3	17.2	13.0	-	
DT9	547452	263175	27.0	19.4	18.6	11.5	11.3	11.3			13.0	18.2	15.1	22.7	16.8	12.8	-	
DT10	542537	261467	32.0	20.1											-	-	-	
DT11	544034	244585	32.1												-	-	-	
DT12	544119	261862			24.9	12.6	12.3	10.8	11.4	13.0	15.4	21.7	14.3	20.8	15.7	11.9	-	
DT13	543955	263588	25.4	19.2	22.0	13.7	11.7	10.7	10.0	11.6	14.3	17.9	20.5	22.8	16.7	12.7	-	
DT14	544050	263306	38.4	27.5	28.7	19.5	18.0	18.4	17.5	15.5	21.3	24.7		26.5	23.3	17.7	-	
DT15	544243	261819	25.5	18.2	20.9	12.7	13.1	10.8	10.4	10.8	13.8	15.8		17.6	15.4	11.7	-	
DT-32N	548742	264698	32.6	21.9	21.4	18.7				16.3	20.0	20.6	20.6	27.5	22.2	16.9	-	
DT20	544828	261738	26.4												-	-	-	
DT22	545435	261906	30.6	21.3	23.4	18.4	13.5	11.3			15.7	16.4			18.8	14.2	-	
DT23a	544557	216571	24.8	14.7		9.3	10.0								-	-	-	Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only
DT23b	544557	216571	16.2	14.6		9.6	9.3								-	-	-	Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT23 c	544557	216571	21.6	19.9			9.3								14.1	10.6	-	Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only
DT26	543768	263708	25.8	16.2	25.0	14.6	12.3	13.1	11.7	12.8	15.3	20.3	18.3	22.0	17.3	13.1	-	
DT28	545169	261764	30.6	20.2	24.0	16.6	13.3	10.9	10.5	12.9	15.4	18.9	20.7	19.7	17.8	13.5	-	
DT29	552961	249251	19.0	11.6	16.1	8.6	7.3	5.7	6.3	7.3	7.4	9.1	10.5	17.1	10.5	8.0	-	
DT-30N	549154	266006	25.0	19.0	21.1	14.7	12.3	10.9	10.0	20.3	13.5	17.7	20.1	9.3	16.2	12.3	-	
DT31	549457	258573	31.5	20.0	19.3	13.0	11.3	10.8	10.2	14.3	7.1	16.8	14.2	26.2	16.2	12.3	-	
DT32	549406	257551	28.7	18.2	24.8	15.6		12.8	14.9	16.9	15.9	14.5	18.7	27.4	18.9	14.4	-	
DT33	533359	259765	20.9	16.3	17.9	5.7	9.5	7.4	7.1	10.0	8.8	12.3	10.4	18.7	12.1	9.2	-	
DT34	532092	259086	23.7	16.1	18.3	6.4	10.1	10.2	9.0	9.9	11.6	15.0	11.4	20.6	13.5	10.3	-	
DT35	531247	259475	25.9	14.8	18.8	12.7	9.1	8.2		9.1	11.0	13.1	16.3	22.5	14.7	11.2	-	
DT36	538122	259523	25.8	16.2	21.7	12.9		8.8	11.1	14.8	13.1	13.3	13.1	23.0	15.8	12.0	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1 (confirm by selecting in box).**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22 (confirm by selecting in box).**

☒ **National bias adjustment factor used (confirm by selecting in box).**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box).**

☒ **South Cambridgeshire 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 South Cambridgeshire District Council During 2022

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

Additional Air Quality Works Undertaken by South Cambridgeshire District Council During 2022

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

QA/QC of Diffusion Tube Monitoring

NO_2 monitoring was undertaken at 28 sites within the district using passive diffusion tubes. The tubes were supplied and processed by SOCOTEC Didcot, who supplied the following information. 'The samples have been analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance.' The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection. Please note:

(i) As set out in the practical guidance, the results were initially calculated assuming an ambient temperature of 11°C, the reported values have been adjusted to 20°C to allow for direct comparison with EU limits.

(ii) The reported results have not been bias adjusted.

This analysis of diffusion tube samples to determine the amount of nitrogen dioxide present on the tube is within the scope of our UKAS schedule. Any further calculations and assessments requiring exposure details and conditions fall outside the scope of our

accreditation. In the AIR PT inter-comparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, SOCOTEC currently holds the highest rank of a Satisfactory laboratory.

All monitoring has taken place in line with the 2022 diffusion tube monitoring calendar as published by Defra.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Four diffusion tube monitoring locations (one of which was a triplicate site) within South Cambridgeshire District Council recorded data capture of less than 75% and these have been annualised in line with the TG.22 Guidelines and the annualisation has been summarised in Table C.2.

All sites used for annualisation were background sites forming part of the Defra AURN network within 50 miles of South Cambridgeshire.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Northampton Spring Park	Annualisation Factor Wicken Fen	Annualisation Factor Boreham-wood Meadow Park	Annualisation Factor London Haringey Priory	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT5	1.0269	0.9988	1.0354	1.0216	1.0207	15.7	16.0
DT-6N	0.8814	0.8572	0.8821	0.9060	0.8817	23.6	20.8
DT22	0.9943	0.9811	1.0064	0.9906	0.9931	18.8	18.7
DT23a	0.9598	0.9770	1.0404	1.0036	0.9952	-	-
DT23b	0.9598	0.9770	1.0404	1.0036	0.9952	-	-
DT23c	0.9598	0.9770	1.0404	1.0036	0.9952	14.1	14.0

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

South Cambridgeshire District Council have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data.

The national bias adjustment factor was used as although a local co-location study was undertaken in 2022, there was insufficient data capture for applying a local bias adjustment factor over a national factor, as per Box 7.11 of LAQM.TG22. A summary of bias adjustment factors used by South Cambridgeshire District Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	03/20	0.75
2018	National	-	0.76

QA/QC of Automatic Monitoring

South Cambridgeshire District Council is a member of the Calibration Club, operated by AEAT now Ricardo – AEA. All NOx analysers are chemiluminescence analysers. All particulate matter analysers are BAMs. In line with current guidance, BAM data is multiplied by 1.3 to give the gravimetric equivalent. QA/QC of automatic monitoring data is carried out by Ricardo. Tri-annual audits of the monitoring stations are carried out by Ricardo. Services of all the three AQ monitoring stations i.e. Impington, Girton and Orchard Park are carried out bi-annually by the appointed Equipment Support Unit (ESU) – ACOEM (Air Monitors). The sites are manually calibrated on a monthly basis by a Council Officer serving as Local Site Operative (LSO). The output from the calibrations is forwarded to Ricardo – AEA for QA/QC and ratification purposes. The monitoring data in the ASR has been ratified. Live and historic data is available at https://scambs-airquality.ricardo-aea.com/.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of PM_{10}/$PM_{2.5}$ monitor(s) utilised within South Cambridgeshire District Council do not required the application of a correction factor.

Automatic Monitoring Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Annualisation was required for all data recorded at Girton site with data capture of 36.18% for NO_2 and 34.50% for PM_{10}. For Impington, just the $PM_{2.5}$ required annualisation, with data collection of 26.1%. At Orchard Park, both $PM_{2.5}$ and PM_{10} required annualisation with data capture of 72.4% and 62.32% respectively.

The annualisation summaries are included in Tables C.3 to C.5 for the various pollutants. All sites used for annualisation are Defra AURN background sites, where possible within 50 miles of the subject site, although some of the sites used for PM may be slightly further given the lack of background PM sites with an acceptable data set close to South Cambridgeshire.

Table C.3 – Annualisation Summary NO_2 (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Northampton Spring Park	Annualisation Factor Wicken Fen	Annualisation Factor Boreham-wood Meadow Park	Annualisation Factor London Haringey Priory	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
Girton	0.89	0.85	0.96	0.88	0.89	15.1	13.4

Table C.4 – Annualisation Summary PM_{10} (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Norwich Lakenfields	Annualisation Factor Leicester University	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
Girton	0.80	0.85	0.825	18.2	15.0
Orchard Park	1.09	1.03	1.06	12.1	12.8

Table C.5 – Annualisation Summary $PM_{2.5}$ (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Northampton Spring Park	Annualisation Factor Norwich Lakenfields	Annualisation Factor Leicester University	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
Impington	1.20	1.29	1.15	1.21	6.2	7.5
Orchard Park	0.92	0.89	0.91	0.9066	13.7	12.4

NO_2 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 NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No automatic NO_2 monitoring locations within South Cambridgeshire District Council required distance correction during 2021.

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

Figure D.1 – Map of Automatic Monitoring Site

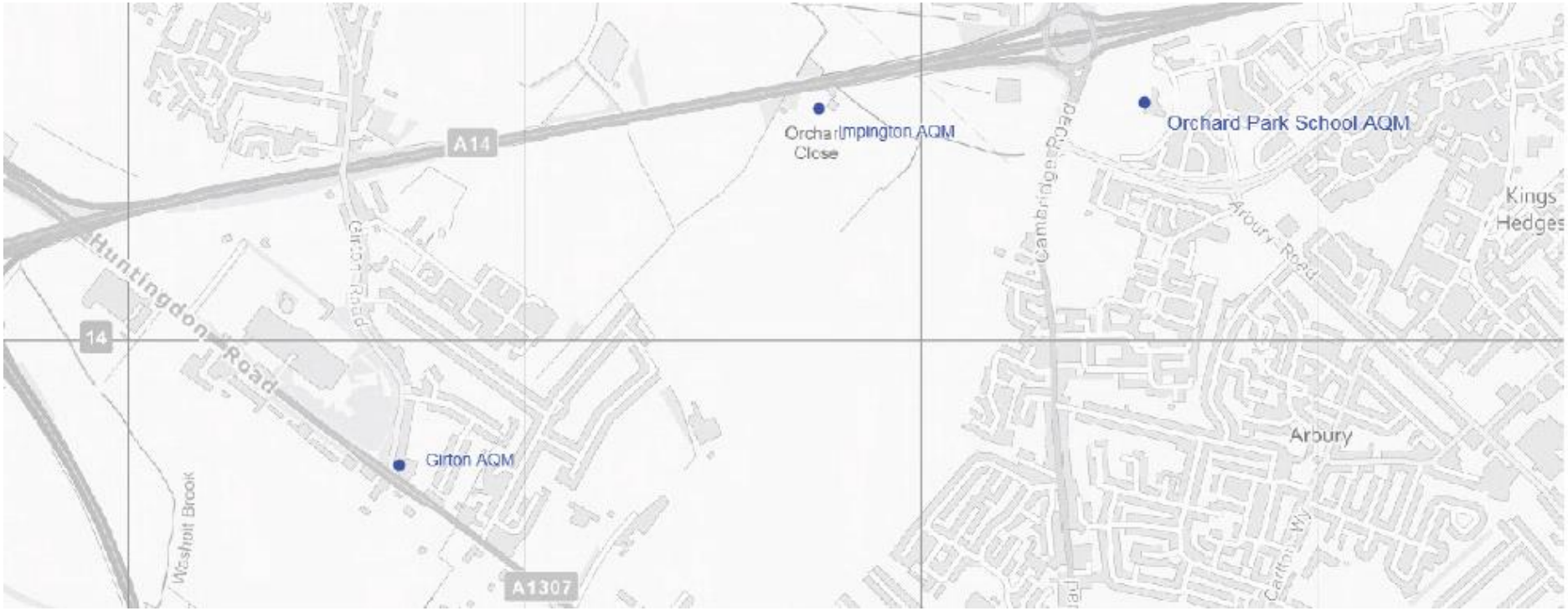
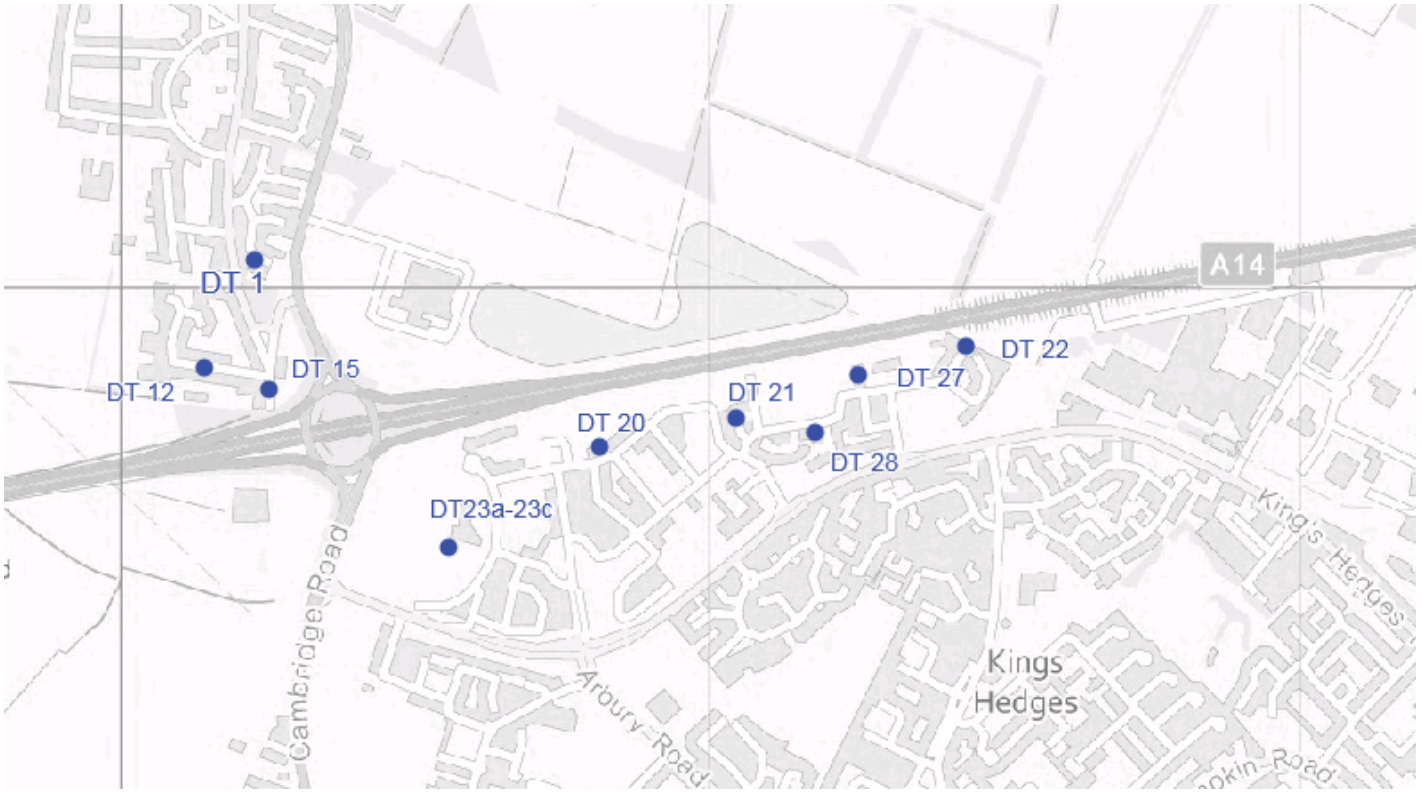


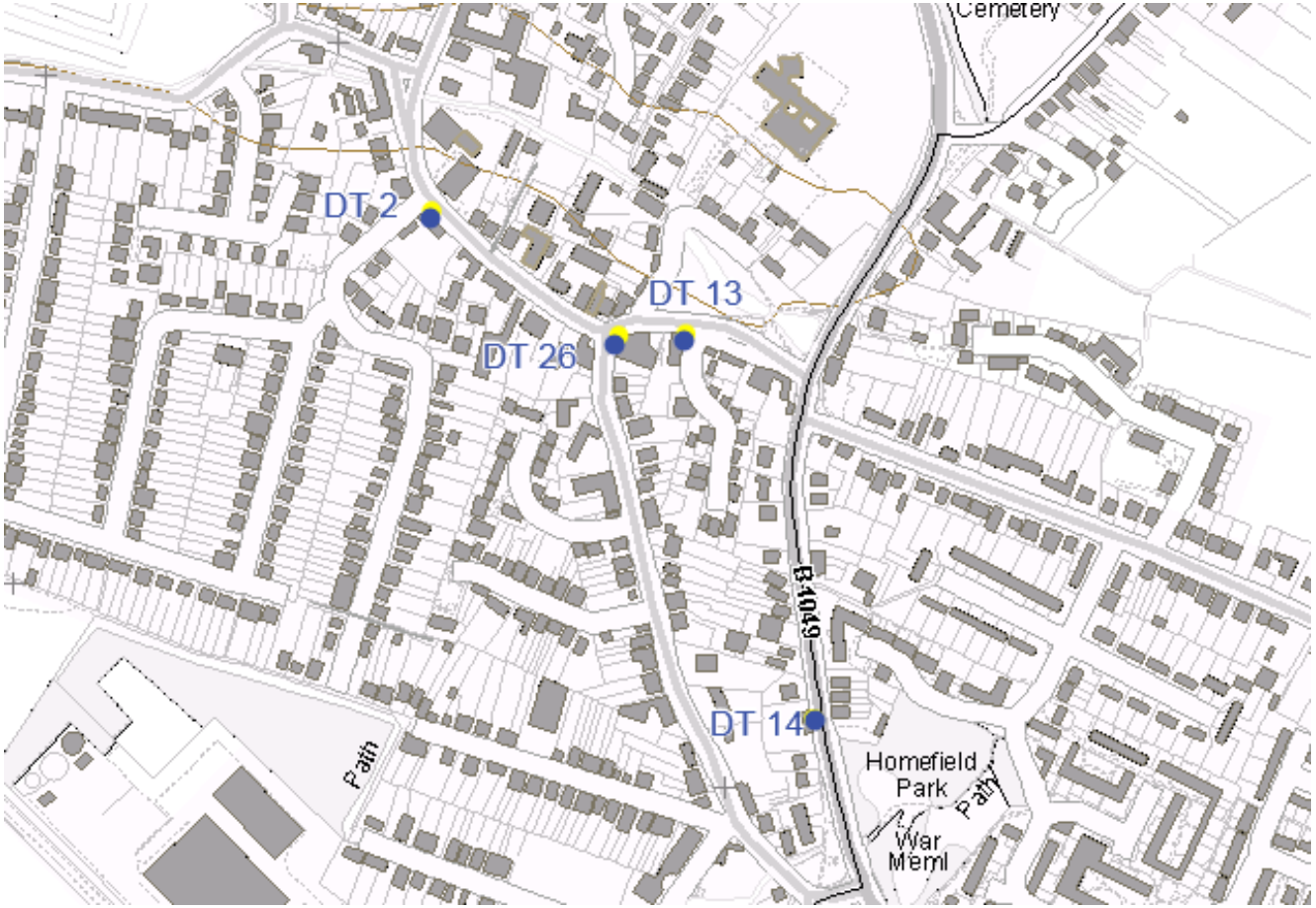
Figure D.3 - Map of Non-Automatic Monitoring Site

Diffusion Tube Locations – Orchard Park and Impington (AQMA)



Diffusion Tube Locations – A14 and Bar Hill (AQMA)

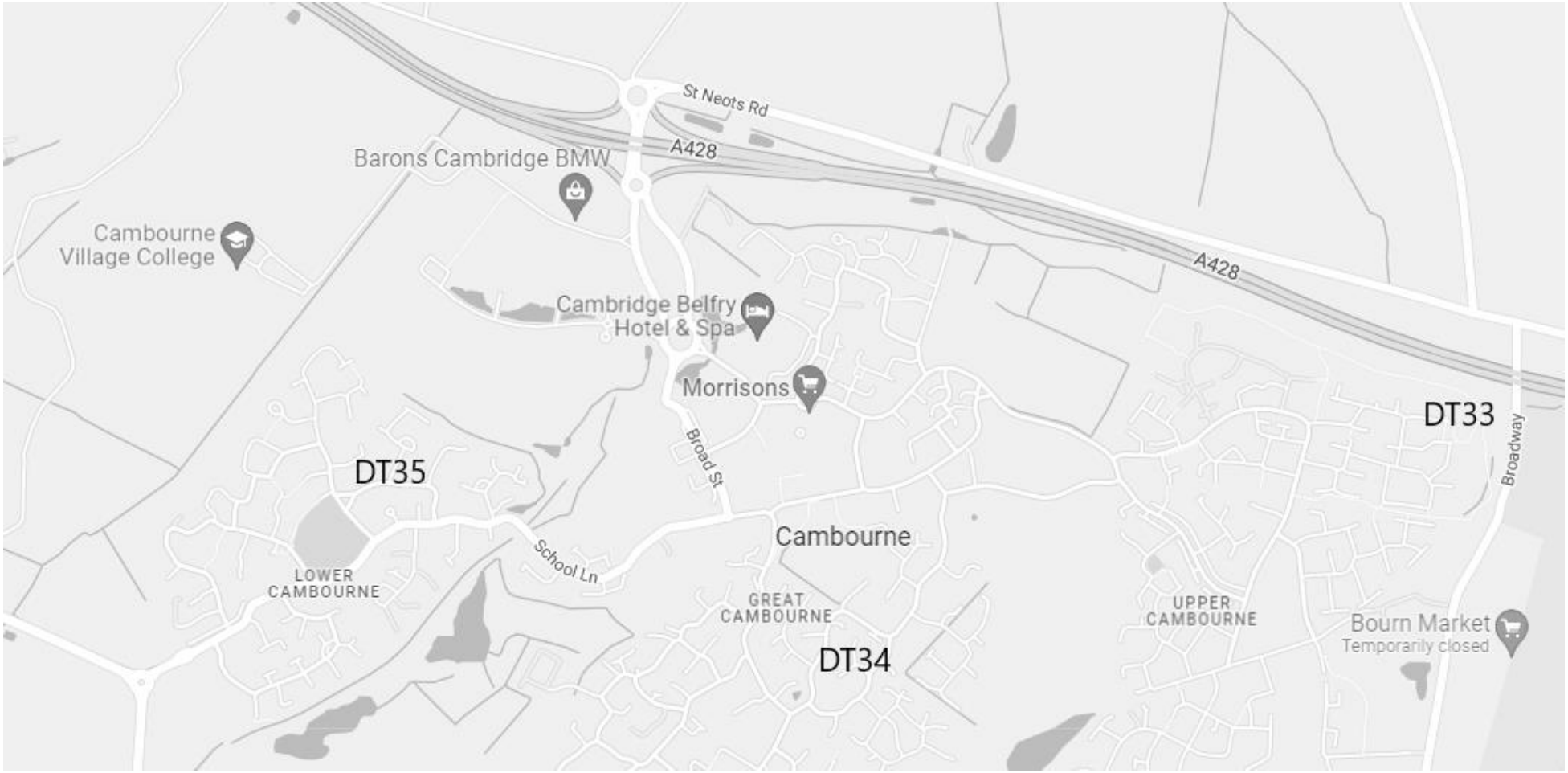
Diffusion Tube Locations – Histon



Diffusion Tube Locations – Waterbeach, Milton and A10

Diffusion Tube Locations – Northstowe

New Tubes Location – Cambourne



New Tubes Location – Hardwick

New Tubes Location - Teversham and Cherry Hinton

Diffusion Tube Locations South of District - Harston, Sawston, A505, Great Abington and Linton

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[16]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Cambridgeshire County Council - The Local transport Plan 3 (2011 – 2031)
- Air Quality Regulations 2000 and (Amendment) regulations 2002
- Air Quality Action Plan for the Cambridgeshire Growth Areas (2010)
- Deriving NO_2 from NO_x for Air Quality Assessments of Roads – Updated to 2006
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2000)
- The SCDC Detailed Assessment of Nitrogen Dioxide along the A14 Corridor (2006)
- The SCDC Detailed Assessment of PM_{10} along the A14 Corridor (2008)
- The SCDC Further Assessment of NO_2 and PM_{10} along the A14 Corridor (2008)