2021 Air Quality Annual Status Report (ASR)

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

Date: June 2021

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Executive Summary: Air Quality in Our Area

Air Quality in South Cambridgeshire

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

South Cambridgeshire is a rural district which enjoys generally good air quality. The area has good rail and road links with London and the South-East, including the A14 and M11/A11 corridors. The demand for housing is therefore very high, with future developments mainly to be residential and often reliant on road-based transport for travel to Cambridge City, London and the surrounding area. As such, the district is undergoing significant growth with major developments to keep up with the increase in demand for housing, including Northstowe (10,000 dwellings) to the North West of Cambridge, Waterbeach Barracks (6000-10,000 dwellings) to the North East of Cambridge, Bourn Airfield and Cambourne West to the West of Cambridge. Air quality impacts in the district are primarily related to the areas of growth and the major roads running through the district.

South Cambridgeshire District Council (SCDC) declared an Air Quality Management Area (AQMA) along the A14 between Bar Hill and Milton in 2008 for exceedance of the annual mean Nitrogen Dioxide (NO_2) and 24-hour Particulate Matter (PM_{10}) objectives. Pollution levels have been monitored through a network of Diffusion Tubes and Automatic Monitors

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[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

[3] Defra. Air quality appraisal: damage cost guidance, July 2020

[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

since. A trend of decreasing monitored concentrations has been recorded within the AQMA, with no exceedances above the objective levels for any pollutant since 2014. Therefore, as reported in the 2020 ASR and as supported by Defra, we propose to revoke this AQMA. This process was delayed by Covid-19, but will be progressed over the next year. The supporting evidence for this decision is discussed in Section 0.

Actions to Improve Air Quality

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

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

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

- A review of the existing monitoring network has been completed, focusing on the areas of major development in the district. In early 2021, work has started to update the monitoring network to reflect this review, including planning the relocating of some diffusion tubes to more relevant locations, the procurement of new automatic continuous monitors and the purchase of additional indicative real-time Zephyr monitors. Details of this will be provided in the 2022 Annual Status Report.
- A hotspot monitoring initiative is underway using indicative real-time monitors (Zephyrs), enabling the Council to test the reliability of alternative technologies for air quality monitoring and conduct targeted studies, such as the first monitoring air quality near schools. The first monitor has been in place in Harston near Harston and Newton Community Primary School since late 2020, with data to be made

[5] Defra. Clean Air Strategy, 2019

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

available via a report after a minimum of 6-months operation. A further two monitors were purchased for deployment in 2021.

- A new Air Quality Strategy has been completed and will be presented for an approval process. 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. The adoption of this was delayed by Covid-19 and local election but will be progressed in 2021.
- Detailed air quality requirements were included in the Sustainable Design & Construction Supplementary Planning Document (SPD) adopted in January 2020. The requirements range from improving sustainable and low emission transport to facilitating schemes and infrastructure for behavioural change.
- A new monitor was installed at Orchard Park School near the A14 in late 2019. The aim of this initiative is to monitor the actual levels of exposure for sensitive receptors near major roads. This has been operating in the 2020 reporting year and data is reported on.

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'[7]. The supporting actions are summarised here:

- 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[8]. This will include the replacement of our diesel refuse fleet with low carbon vehicles; our first electric refuse vehicle was purchased in 2020 and is in operation. In addition to the electric option the service is also investigating other options such as hydrogen as the solution to reducing our CO_2 impact to the environment.
- Our Zero Carbon Communities Grant[9],scheme funds community initiatives to improve sustainability. Seventeen projects were awarded a total of just under £100,000 in 2019-20 including five schemes to encourage cycling.

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[7] Being green to our core https://www.scambs.gov.uk/your-council-and-democracy/performance-and-plans/our-business-plan/

[8] Zero Carbon Strategy https://www.scambs.gov.uk/climate-change/zero-carbon-strategy/

[9] Zero Carbon Communities Grant https://www.scambs.gov.uk/community-development/grants/zero-carbon-communities-grant/.

- We have installed electric vehicle charging points at our Waterbeach depot. We are currently working on a major retrofit project at our main office, South Cambridgeshire Hall. This will largely replace the need for gas, as heating will be provided from a ground source heat pump. Electric vehicle charge points powered by solar panels will be installed as part of this project.

Conclusions and Priorities

The review of the monitoring data in 2020 has identified the following:

- No exceedances of any of the national air quality objectives were reported at any of the monitoring locations.
- A decrease in concentrations was seen at all monitoring locations.
- There were again no exceedances of any objectives at any of the sites in the AQMA, therefore it is proposed to revoke the AQMA.
- Covid-19 impacted the changeovers of the diffusion tubes during the lockdown in 2020, resulting in low data capture for the tubes. However, there was sufficient data to allow annualisation of the diffusion tubes.
- Data capture was generally good for the automatic continuous monitors.
- No new sources of pollution have been identified.
- A review of the existing monitoring network has been completed and work to update the monitoring network to reflect this is underway.

Local Engagement and How to get Involved

Previous Annual Status Reports and details on air quality monitoring are available on our website[10] and you can share your views via our email address air.quality@scambs.gov.uk and follow our Facebook page[11] 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:

[10] https://www.scambs.gov.uk/environment/pollution/air-pollution/local-air-quality-management/

[11] https://www.facebook.com/SouthCambridgeshireDistrictCouncil/

  - Avoid using your car for short trips (under 2 miles) – short trips are very polluting as modern engines needs to reach a very high temperature to work efficiently; on short trips it won't reach that temperature.
  - 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 http://www.theaa.com/motoring_advice/fuels-and-environment/drive-smart.html.
  - 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 – more information is available at https://woodsure.co.uk/are-you-ready-to-burn/
- 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.

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Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in South Cambridgeshire during 2020. 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 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

Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by South Cambridgeshire District Council can be found in Table 2.1. The table presents a description of the one AQMA that is currently designated within South Cambridgeshire. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean;
- PM_{10} 24-hour mean;

We propose to revoke AQMA 1 following consistent compliance with the national objectives at all monitoring sites in the AQMA since 2014 and the completion of the A14 improvement works by Highways England. This was proposed, and supported by Defra, in the 2020 ASR however the process was delayed by the Covid-19 pandemic. Monitoring will continue in the AQMA following its revocation. The data from all diffusion tube locations within the AQMA since 2012 is shown in

Figure 2.1, and that from the automatic continuous monitors is shown in Figure 2.2.

Figure 2.1 - Diffusion Tubes within AQMA

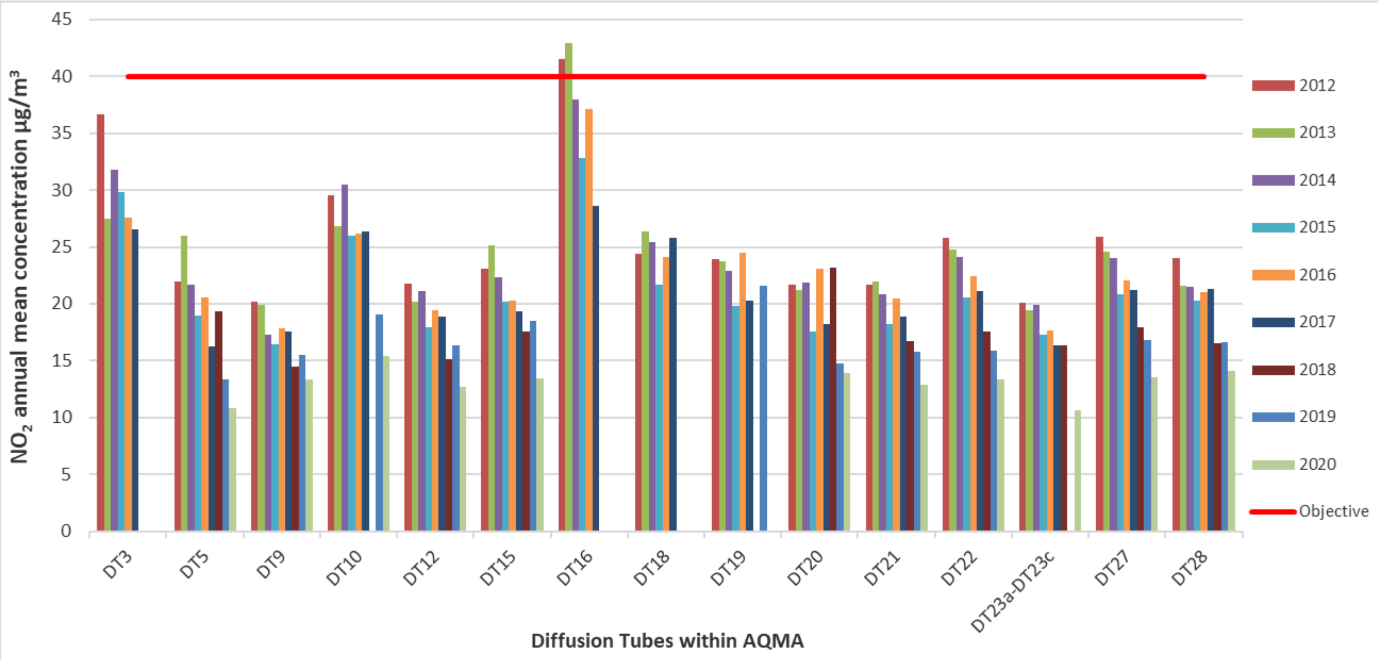

Figure 2.2 - Automatic monitoring sites within AQMA

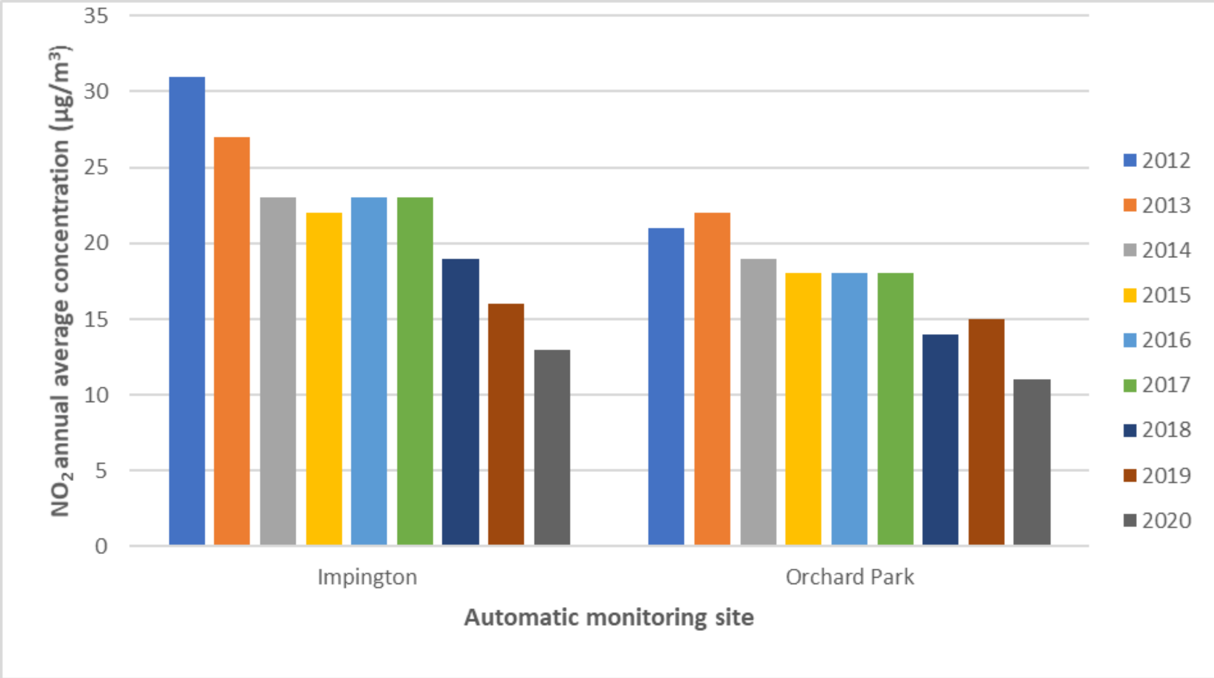
35
30
25
20
15
10
5
0
NO2 annual average concentration (µg/m3)
Impington
Orchard Park
Automatic monitoring site
2012
2013
2014
2015
2016
2017
2018
2019
2020

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 1	2008	NO_2 Annual Mean	Area along A14 between Bar Hill and Milton	YES	42 µg/m^3	15.4 µg/m^3	Air Quality Action Plan for Cambridgeshire Growth Areas, 2009	https://www.scambs.gov.uk/media/7295/aqma.pdf
AQMA 1	2008	PM_{10} 24 Hour Mean	Area along A14 between Bar Hill and Milton	YES	52 exceedances	0 exceedances	Air Quality Action Plan for Cambridgeshire Growth Areas, 2009	https://www.scambs.gov.uk/media/7295/aqma.pdf

☒ **South Cambridgeshire District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **South Cambridgeshire District Council confirm that all current AQAPs have been submitted to Defra.**

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

Defra's appraisal of last year's ASR concluded the Council provided a thorough report. It was noted that it is only necessary to present results of the monitoring sites where data is available for the reporting year in question and that a comparison of South Cambridgeshire's public health outcomes framework/fraction of mortality attributable to $PM_{2.5}$ emissions with neighbouring authorities and England would be encouraged. These points have been addressed for this year's report.

South Cambridgeshire District Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 6 measures are included within Table 2.2, with the type of measure and the progress South Cambridgeshire District Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Additional measures completed in 2020 include:

- A review of the existing monitoring network has been completed, focusing on the areas of major development in the district. In early 2021, work has started to update the monitoring network to reflect this review, including planning the relocating of some diffusion tubes to more relevant locations, the procurement of new automatic continuous monitors and the purchase of additional indicative real-time Zephyr monitors. Details of this will be provided in the 2022 Annual Status Report.
- Hotspot monitoring initiative has been started using indicative real-time monitors (Zephyrs), enabling the Council to test the reliability of alternative technologies for air quality monitoring and conduct targeted studies, such as the first monitoring air quality near schools. The first monitor has been in place in Harston near Harston and Newton Community Primary School since late 2020, with data to be made available via a report after a minimum of 6-months operation. A further two monitors were purchased for deployment in 2021. Further details will be provided in the 2022 Annual Status Report.
- A new Air Quality Strategy with emphasis on improving air quality district wide and beyond any existing Air Quality Management Areas has been prepared and is due

to go through an approval process. The adoption of this was delayed by Covid-19 and local election but will be progressed in 2021.

- Detailed air quality requirements were included in the Sustainable Design & Construction Supplementary Planning Document (SPD) adopted in January 2020. The requirements range from improving sustainable and low emission transport to facilitating schemes and infrastructure for behavioural change.

As reported in Section 2.1 above, South Cambridgeshire District Council intends to revoke the AQMA following 7 years of sustained compliance with the objectives. South Cambridgeshire District Council will continue to implement actions to improve air quality in the district following the revocation of the AQMA.

Table 2.2 – 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	2020	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

$PM_{2.5}$ – 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.

South Cambridgeshire District Council undertakes monitoring for $PM_{2.5}$ at two sites, one roadside site at Girton and one urban background site at Orchard Park. In 2020, these measured annual mean concentrations of 10 and 13 $\mu g/m^3$ respectively. This represents a decrease in concentration compared to 2019 at the Girton site. This was the first year data was available at the Orchard Park site.

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[12]. 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[13]. 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 congestion[14]. 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. South Cambridgeshire District Council has also purchased indicative real-time zephyr monitors

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[12] Public Health Outcomes Framework (PHOF), Fraction of all-cause mortality attributable to particulate air pollution https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000006/ati/102/are/E10000003/iid/30101/age/230/sex/4/iid2/30101/age2/230/sex2/4/cid/4/tbm/1/page-options/cin-ci-1_car-do-0_car-ao-0

[13] Wood Burning Stoves https://www.scambs.gov.uk/media/3392/defra_-_open_fires_wood-burning_stoves_1.pdf

[14] Greenways Project https://www.greatercambridge.org.uk/transport/transport-projects/greenways/

for targeted hotspot monitoring, including for $PM_{2.5}$. The first monitor was installed in Harston near Harston and Newton Community Primary School in late 2020, with data to be made available via a report after a minimum of 6-months operation. A further two monitors were purchased for deployment in 2021.

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

This section sets out the monitoring undertaken within 2020 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 2016 and 2020 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

South Cambridgeshire District Council undertook automatic (continuous) monitoring at 3 sites during 2020. 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. Both Orchard Park and Impington site are located within the Air Quality Management Area for NO_2 and PM_{10}. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The https://scambs-airquality.ricardo-aea.com/ page presents automatic monitoring results for South Cambridgeshire District Council, with automatic monitoring results also available through the UK-Air website .

NO_2 data capture was 98% for the Impington and Orchard Park sites and 99% for the Girton site. PM_{10} data capture was 92% for Orchard Park, 95% for Girton and 73% for Impington site. $PM_{2.5}$ data capture was 74% at Orchard Park and 87% at Girton. As a result, the Impington PM_{10} data and Orchard Park $PM_{2.5}$ data were annualised.

The monitoring results show 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

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 31 sites during 2020, two of which were triplicate sites. This included two new or reinstated sites. A review of the Council monitoring network is underway and any changes in monitoring sites as a result of this will be reflected in the 2022 ASR. Table A.2 in Appendix A presents the details of the non-automatic sites. Data capture was low as a result of the Covid-19 lockdown impacting tube changeovers, therefore data from all sites was annualised. More details on the impact of Covid-19 can be found in Appendix F. The monitoring results showed no exceedance of any long-term or short-term objective at any monitoring site. A trend of decreasing concentrations from 2019 to 2020 was seen at every monitoring location.

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

Individual Pollutants

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 33%), and distance correction. Further details on adjustments are provided in Appendix C.

3.1.3 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 40 $\mu g/m^3$. 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 2020 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.

g) Trends in Annual Mean NO_2 Concentrations – Automatic Monitoring Sites

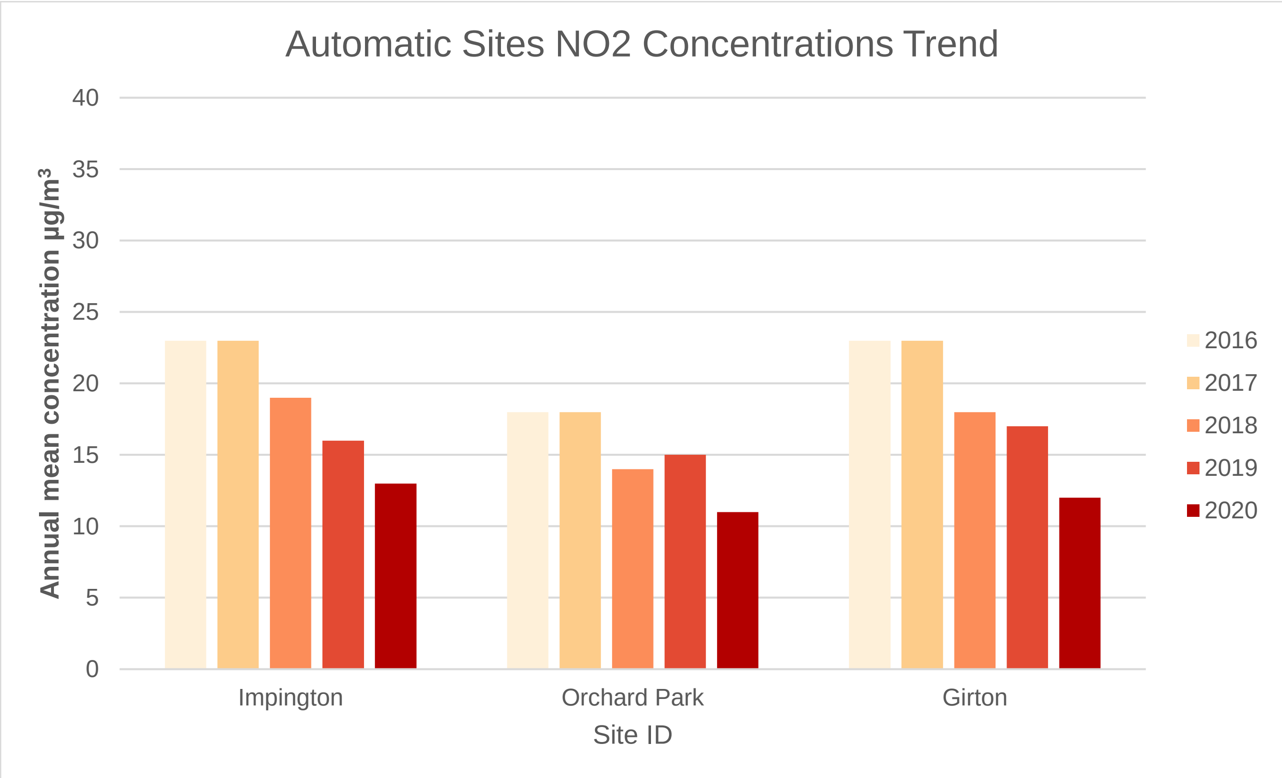


Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200 µg/m^3, not to be exceeded more than 18 times per year.

There were no exceedances of any of the air quality objectives for NO_2 at any monitoring site in 2020. The maximum annual concentration measured in 2020 was 20.2 µg/m^3, recorded at DT14, Water Lane, Histon. A review of the diffusion tube monitoring network is underway and the network will be updated to reflect this. A procurement process for additional automatic monitoring locations is also underway, to be completed in late 2021. A trend of decreasing concentrations was observed at all monitoring sites. This continues the general trend observed of decreasing concentrations in the district over the last five years. As detailed in Section 2.1, above, it is proposed to revoke the AQMA in South Cambridgeshire.

3.1.4 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 any of the air quality objectives for PM_{10} at any monitoring site in 2020. The maximum annual concentration measured in 2020 was 15 µg/m^3, recorded at Impington. A procurement process for additional automatic monitoring locations is underway, to be completed in late 2021. A trend of decreasing concentrations was observed at all monitoring sites. As detailed in Section 2.1, above, it is proposed to revoke the AQMA in South Cambridgeshire.

3.1.5 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.

Annual mean concentrations of 13 and 10 µg/m^3 were measured at Orchard Park and Girton respectively. This represents a decrease in concentration at Girton from 2019, matching the trend seen for other pollutants across the district. This was the first year of monitoring for $PM_{2.5}$ at Orchard Park.

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}	YES	Chemiluminescent; BAM	12	2	2
ORCH	Orchard Park Primary School (A14)	Urban Background	544558	261579	NO_2, PM_{10}, $PM_{2.5}$	YES	Chemiluminescent; BAM	1	N/A	2
GIRT	Girton	Roadside	542676	260667	NO_2, PM_{10}, $PM_{2.6}$	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	Y	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	Y	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	Y	7.0	1.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [(1)]	Distance to kerb of nearest road (m) [(2)]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
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	Y	7.0	1.0	No	2.0
DT17	5 Mill Lane, Sawston	Roadside	248545	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	Y	4.0	0.5	No	2.0
DT21	Neal Drive, Orchard Park	Roadside	545056	261784	NO2	Y	7.0	0.5	No	2.0
DT22	Flack End, Orchard Park	Roadside	545435	261906	NO2	Y	7.0	35.0	No	2.0
DT23a, DT23b, DT23c	Orchard Park Primary School	Urban Background	544557	216571	NO2	Y	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	Y	2.0	4.5	No	2.0
DT28	22 Topper Street, Orchard Park	Roadside	545169	261764	NO2	Y	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

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)
DT-30N	63 Denny End Road,Waterbeach	Roadside	549154	266006	NO2	N	7.0	2.0	No	2.0
DT-LN1	Old Railway Tavern, Station Road	Roadside	539847	268169	NO2	N	5.0	2.0	No	2.0
DT-LN2	75 High Street, Longstanton	Roadside	539570	266842	NO2	N	2.0	2.0	No	2.0
DT-LN3	1 Rampton Drift, Longstanton	Roadside	540553	266869	NO2	N	17.0	1.0	No	2.0
DT-LN4	37 Longstanton Road, Oakington	Roadside	540963	264474	NO2	N	5.0	1.0	No	2.0
DT-LN5a, DT-LN5b, DT-LN5c	Longstanton bypass	Roadside	539614	267484	NO2	N	60.0	1.0	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 ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
IMP	543739	261625	Roadside	98.26	98.26	23	23	19	16	13
ORCH	544558	261579	Urban Background	98.11	98.11	18	18	14	15	11
GIRT	542676	260667	Roadside	98.88	98.88	23	23	18	17	12

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.**

☒ **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 $\mu g/m^3$.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring ($\mu g/m^3$)

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 2020 (%) (2)	2016	2017	2018	2019	2020
DT1	544230	262048	Urban Background	49.2	49.2	21.3	17.2	14.7	14.7	11.4
DT2	543770	263678	Roadside	44.2	44.2	27.8	27.4	27.1	27.2	19.7
DT-28N	547436	262295	Roadside	58.3	58.3			22.8	23.0	18.8
DT4	548600	249136	Urban Background	52.2	52.2	26.6	26.1	24.7	23.0	16.5
DT5	538744	263640	Roadside	52.2	52.2	20.6	16.2	19.4	13.4	10.8
DT-6N	555942	246680	Roadside	52.2	52.2			20.2	21.0	15.1
DT7	528131	247399	Roadside	52.2	52.2	11.8	12.1	8.6	10.2	8.5
DT-8N	542555	251001	Roadside	52.2	52.2			17.3	15.3	12.3
DT9	547452	263175	Urban Background	58.3	58.3	17.8	17.5	14.4	15.5	13.3
DT10	542537	261467	Urban Background	42.8	42.8	26.2	26.3	25.8	19.0	15.4
DT11	544034	244585	Urban Background	36.5	36.5	26.0	24.6	24.9	22.5	15.0
DT12	544119	261862	Roadside	58.3	58.3	19.4	18.8	15.1	16.3	12.7
DT13	543955	263588	Urban Background	52.2	52.2	19.2	18.5	17.2	16.3	11.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
DT14	544050	263306	Roadside	52.2	52.2	27.0	26.4	23.6	22.3	20.2
DT15	544243	261819	Urban Background	58.3	58.3	20.3	19.4	17.5	18.5	13.4
DT17	248545	249366	Roadside	44.5	44.5	16.4	14.1	13.1	13.8	10.4
DT-32N	548742	264698	Roadside	48.3	48.3			23.4	21.6	19.0
DT20	544828	261738	Roadside	44.5	44.5	23.1	18.2	23.2	14.7	13.9
DT21	545056	261784	Roadside	58.3	58.3	20.5	18.8	16.7	15.8	12.9
DT22	545435	261906	Roadside	58.3	58.3	22.4	21.2	17.5	15.9	13.3
DT23a, DT23b, DT23c	544557	216571	Urban Background	44.5	44.5	17.7	16.3	16.3		10.6
DT26	543768	263708	Roadside	52.2	52.2	19.7	18.9	17.8	17.1	13.2
DT27	545259	261873	Urban Background	42.3	34.5	22.1	21.2	17.9	16.8	13.5
DT28	545169	261764	Roadside	44.5	44.5	21.0	21.3	16.6	16.7	14.1
DT29	552961	249251	Urban Background	52.2	52.2	12.5	11.0	10.0	10.9	8.4
DT-30N	549154	266006	Roadside	44.5	44.5			16.0		12.2
DT-LN1	539847	268169	Roadside	58.3	58.3	22.7	18.5	18.6	17.4	13.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
DT-LN2	539570	266842	Roadside	48.3	48.3	16.9	16.6	14.5	14.6	11.9
DT-LN3	540553	266869	Roadside	58.3	58.3	13.2	12.7	11.8	11.1	9.0
DT-LN4	540963	264474	Roadside	58.3	58.3	15.2	14.6	12.1		9.9
DT-LN5a, DT-LN5b, DT-LN5c	539614	267484	Roadside	52.2	52.2	26.1	26.8	24.3	23.5	16.3

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.**

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

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

Notes:

The annual mean concentrations are presented as 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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

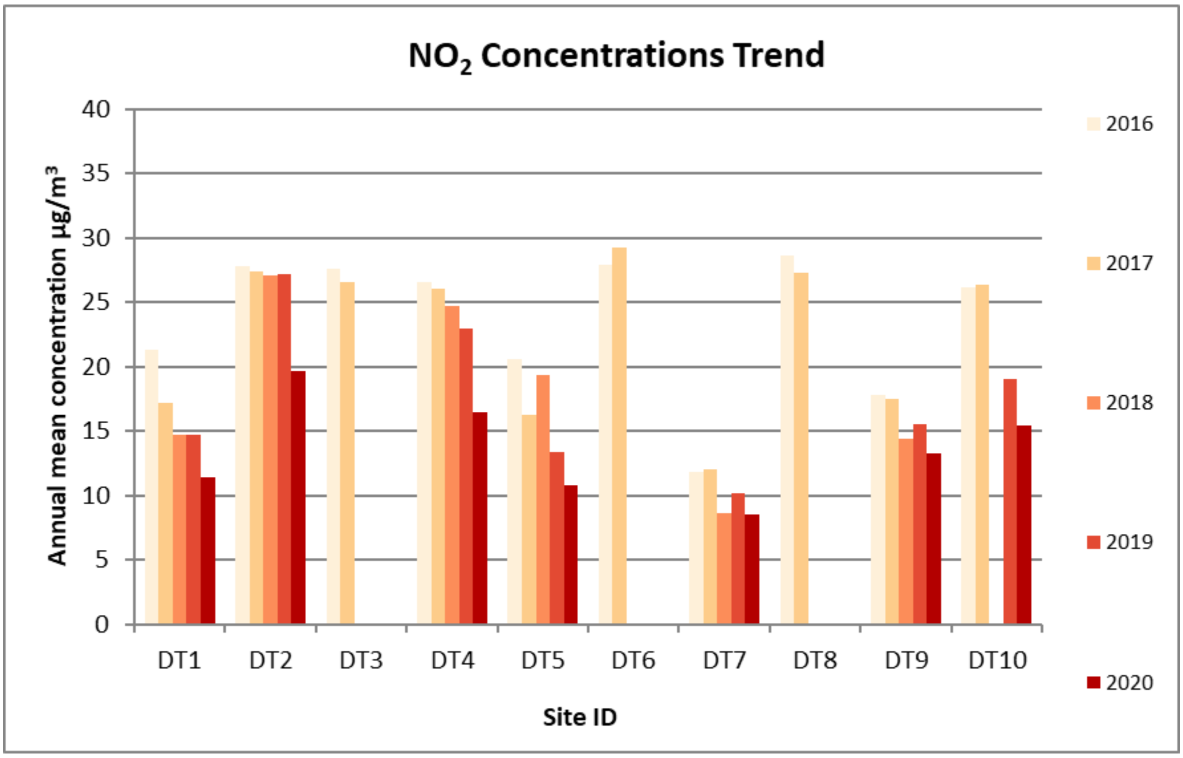
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

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

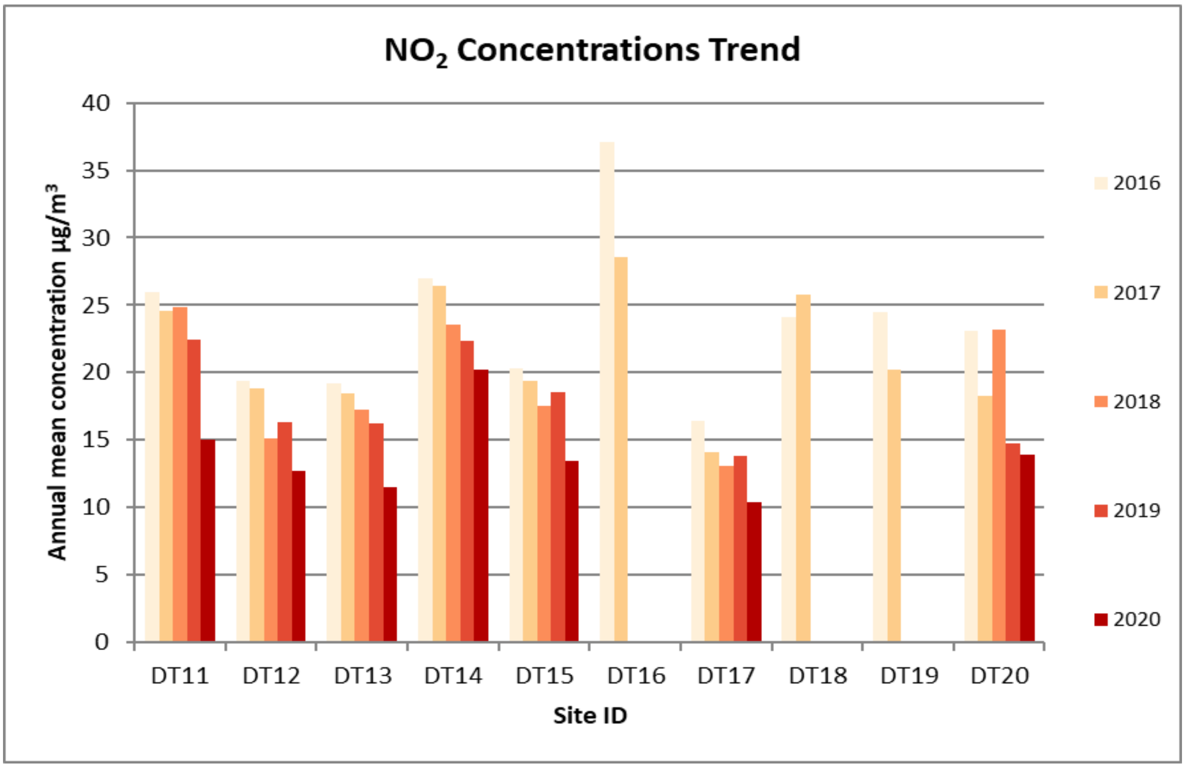
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

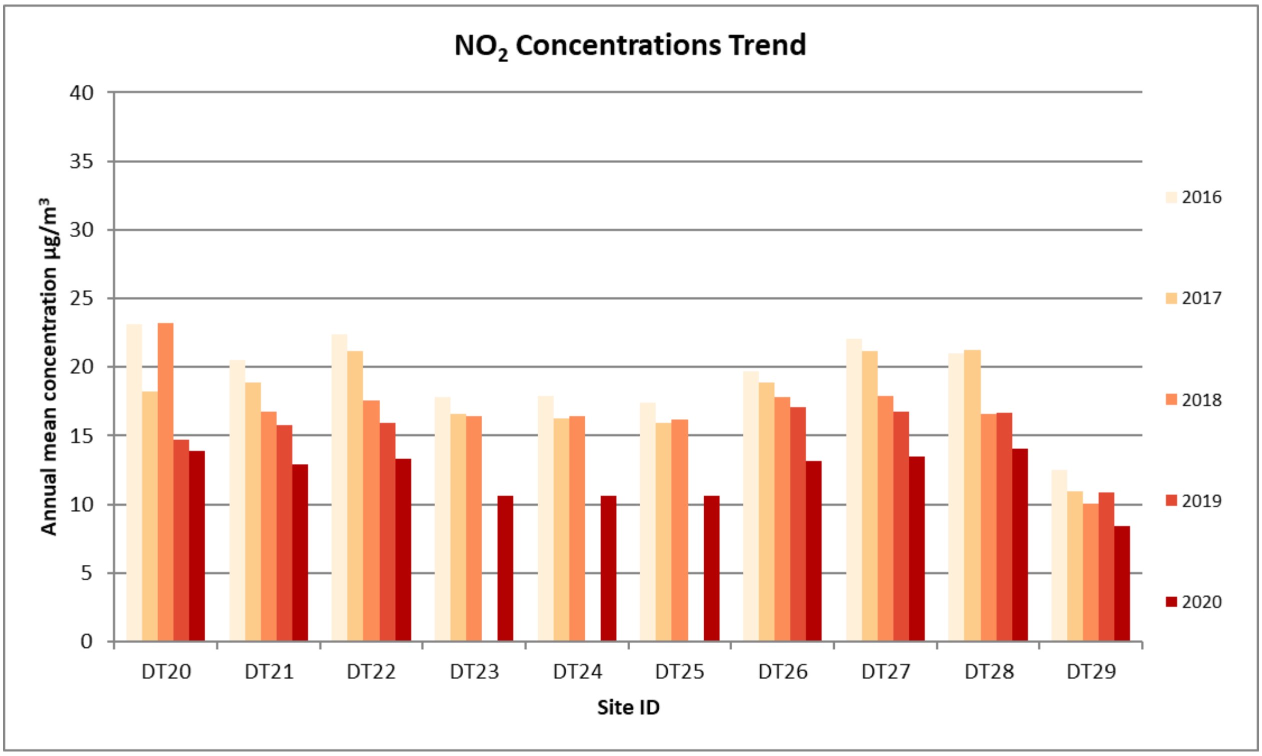
a) Trends in Annual Mean NO_2 Concentrations – DT1-10



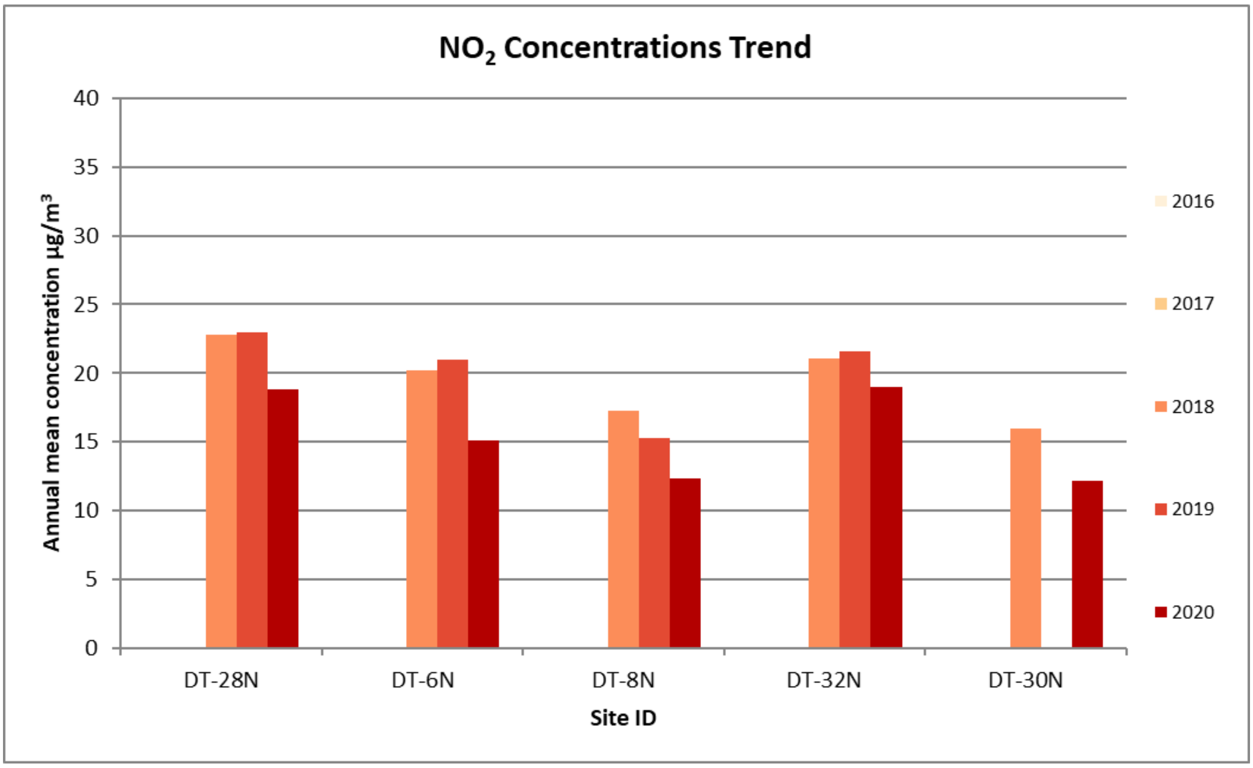
b) Trends in Annual Mean NO_2 Concentrations – DT11-20



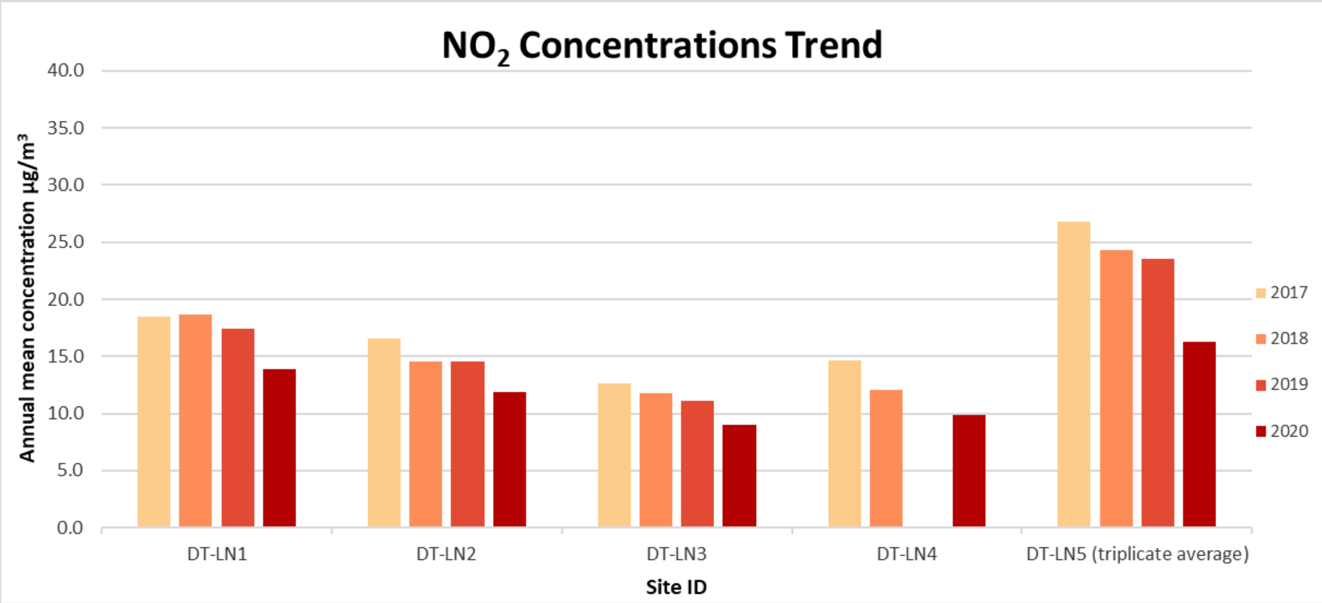
c) Trends in Annual Mean NO_2 Concentrations – DT20-29



d) Trends in Annual Mean NO_2 Concentrations – DT28N, 6N, 8N, 32N and 30N



e) Trends in Annual Mean NO_2 Concentrations – Northstowe Diffusion Tubes



f) Trends in Annual Mean NO_2 Concentrations – All Diffusion Tubes in AQMA

g) Trends in Annual Mean NO_2 Concentrations – Automatic Monitoring Sites

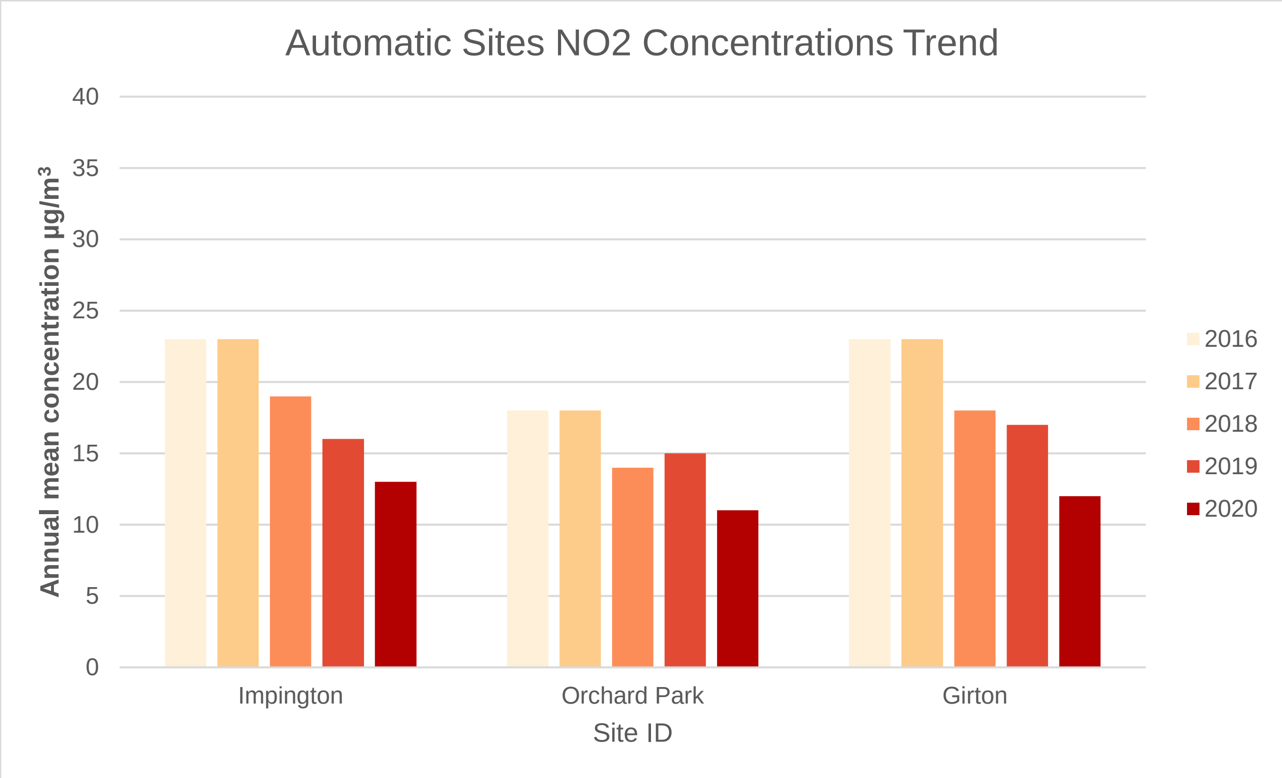


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
IMP	543739	261625	Roadside	98.26	98.26	0	0	0	0	0
ORCH	544558	261579	Urban Background	98.11	98.11	0	0	0	0	0
GIRT	542676	260667	Roadside	98.88	98.88	0	0	0	0	0

Notes:

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

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

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

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

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

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
IMP	543739	261625	Roadside	73.28	73.28	17	16	17	16	15
ORCH	544558	261579	Urban Background	91.67	91.67	16	14	14	14	12
GIRT	542676	260667	Roadside	95.4	95.4	17	17	17	17	14

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16**

Notes:

The annual mean concentrations are presented as µg/m³.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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

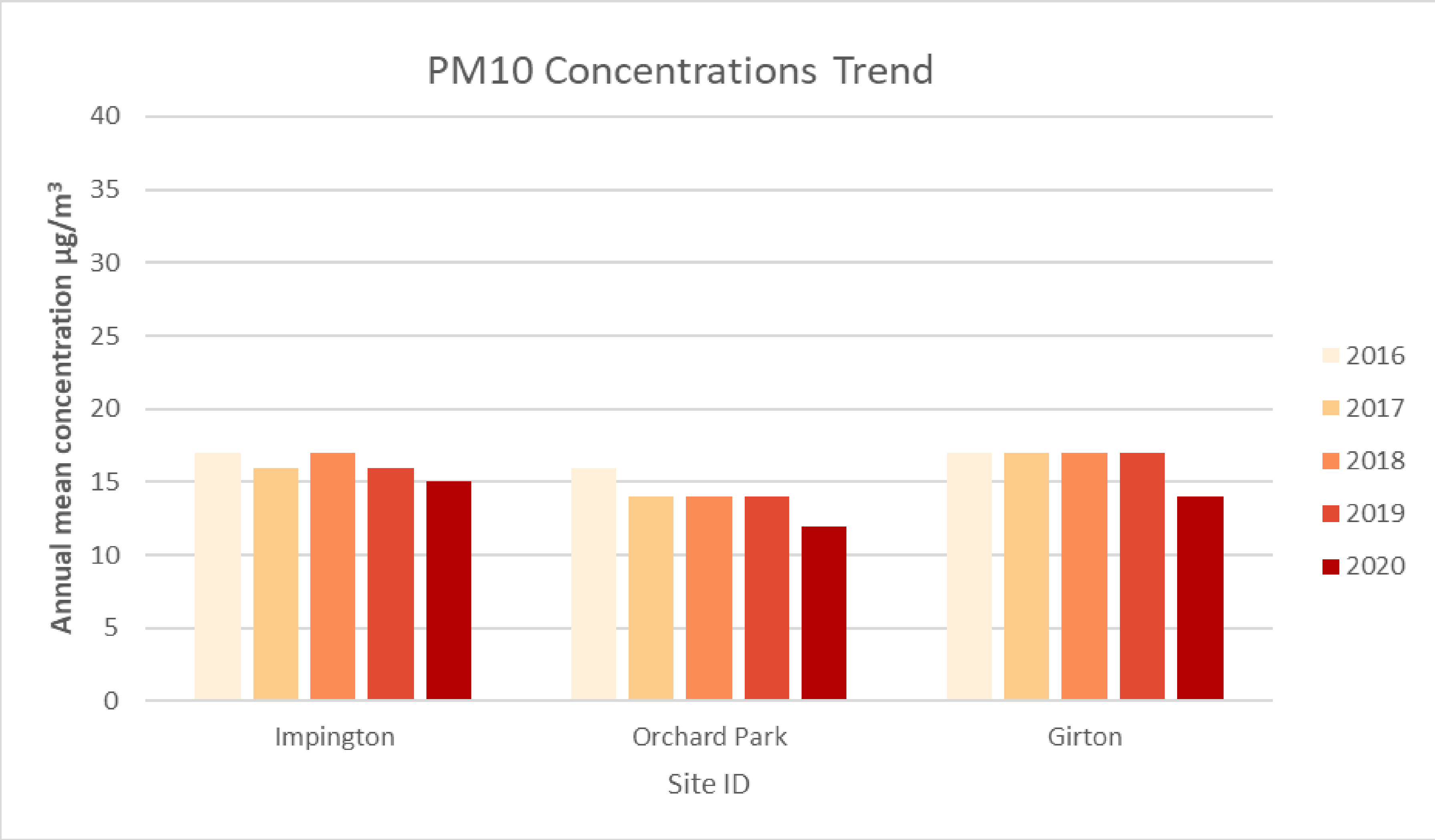


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
IMP	543739	261625	Roadside	73.28	73.28	1	2	1	2	0 (22)
ORCH	544558	261579	Urban Background	91.67	91.67	1	1	1	1	0
GIRT	542676	260667	Roadside	95.4	95.4	1	1	1	3	0

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 2020 (%) (2)	2016	2017	2018	2019	2020
ORCH	544558	261579	Urban Background	73.85	73.85	-	-	-	-	13
GIRT	542676	260667	Roadside	86.77	86.77	13	11	11	11	10

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.**

Notes:

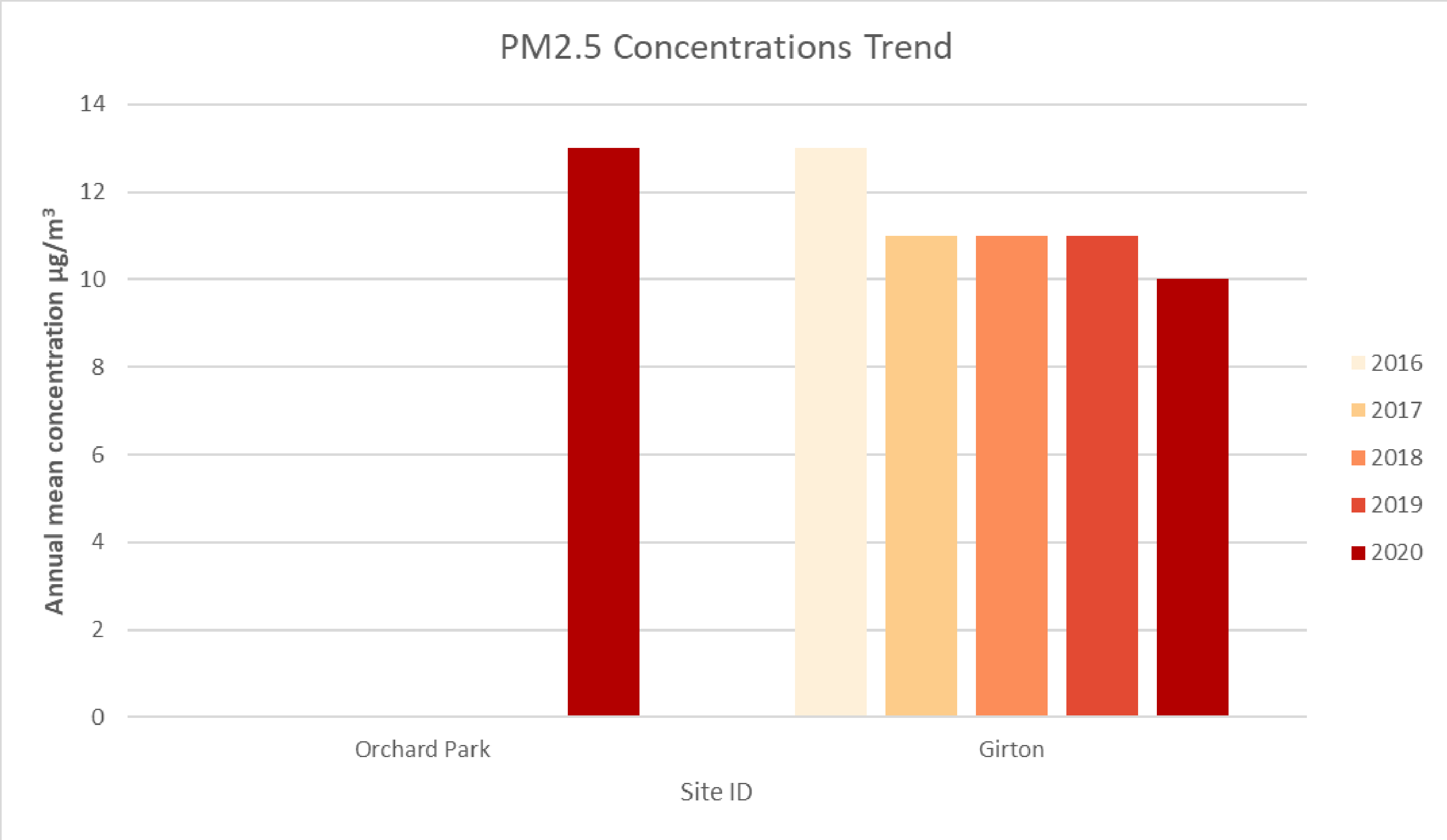
The annual mean concentrations are presented as $\mu g/m^3$.

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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.3 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Diffusion Tube Results ($\mu g/m^3$)

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 (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	544230	262048	25.1	19.8						11.2	12.3		22.3	19.8	18.2	11.4	-	
DT2	543770	263678	42.8							24.7		26.0	36.9	33.7	32.4	19.7	-	
DT-28N	547436	262295	40.0	31.3						16.2	18.5	30.4	35.7	30.8	28.6	18.8	-	
DT4	548600	249136	31.8							19.9	24.0	23.1	29.2	27.7	25.8	16.5	-	
DT5	538744	263640	16.5							15.9	16.2	13.6	20.7	18.9	16.9	10.8	-	
DT-6N	555942	246680	28.8							17.7	19.8	23.4	25.4	27.0	23.6	15.1	-	
DT7	528131	247399	18.2							6.9	8.0	10.4	21.4	16.2	13.4	8.5	-	
DT-8N	542555	251001	20.2							14.3	16.3	18.0	26.8	20.6	19.2	12.3	-	
DT9	547452	263175	30.1	19.2						10.3	14.7	17.5	27.9	23.4	20.2	13.3	-	
DT10	542537	261467	28.6								21.2	23.1	33.3	26.4	26.4	15.4	-	
DT11	544034	244585								18.3	19.4	21.6		17.3	19.1	15.0	-	
DT12	544119	261862	27.9	16.7						12.6	13.6	16.7	25.6	23.1	19.4	12.7	-	
DT13	543955	263588	25.1							11.5	15.0	15.2	25.0	18.1	18.0	11.5	-	
DT14	544050	263306	63.4							17.5	20.0	25.1	35.0	33.0	31.6	20.2	-	
DT15	544243	261819	29.5	20.8						13.4	13.6	17.7	25.9	23.1	20.4	13.4	-	
DT17	248545	249366								10.0	11.8	14.1	22.6	17.3	15.1	10.4	-	
DT-32N	548742	264698	37.0	30.6						23.1	20.2	24.2	30.3		27.2	19.0	-	
DT20	544828	261738								12.6	18.2	19.2	28.9	23.2	20.3	13.9	-	

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 (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT21	545056	261784	26.1	16.3						11.5	15.6	16.1	29.2	23.5	19.7	12.9	-	
DT22	545435	261906	29.5	19.8						13.0	15.2	16.7	24.2	24.2	20.2	13.3	-	
DT23a	544557	216571								10.5	12.8	14.1	22.2	18.8	-	-	-	Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only
DT23b	544557	216571								10.1	12.4	13.3	22.8	19.7	-	-	-	Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only
DT23c	544557	216571								9.9	11.6	13.0	20.7	19.7	15.4	10.6	-	Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only
DT26	543768	263708	24.9							13.7	16.2	19.3	26.5	23.9	20.6	13.2	-	
DT27	545259	261873								14.7	18.0	18.5	20.0		17.7	13.5	-	
DT28	545169	261764								12.6	18.3	18.4	29.6	24.6	20.6	14.1	-	
DT29	552961	249251	17.9							7.6	9.3	9.2	17.3	17.6	13.1	8.4	-	
DT-30N	549154	266006								10.1	15.6	16.0	25.7	22.0	17.8	12.2	-	
DT-LN1	539847	268169	26.4	15.9						15.9	18.7	19.0	29.3	23.1	21.2	13.9	-	
DT-LN2	539570	266842	26.0	16.1						11.1	13.0	13.7	24.5		17.1	11.9	-	
DT-LN3	540553	266869	21.9	11.3						7.4	9.6	10.1	19.4	17.0	13.7	9.0	-	
DT-LN4	540963	264474	23.5	13.1						8.6	10.4	10.6	20.4	19.2	15.0	9.9	-	
DT-LN5a	539614	267484	24.1							24.6	27.2	24.2	29.7	24.8	-	-	-	Triplicate Site with DT-LN5a, DT-LN5b and DT-LN5c - Annual data provided for DT-LN5c only
DT-LN5b	539614	267484	24.9							25.9	25.2	22.1	28.9	24.5	-	-	-	Triplicate Site with DT-LN5a, DT-LN5b and DT-LN5c - Annual data provided for DT-LN5c only
DT-LN5c	539614	267484	21.1							25.4	28.2	24.7	28.3	26.6	25.5	16.3	-	Triplicate Site with DT-LN5a, DT-LN5b and DT-LN5c - Annual data provided for DT-LN5c only

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

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **South Cambridgeshire District Council confirm that all 2020 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 During 2020

South Cambridgeshire District Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by South Cambridgeshire District Council During 2020

South Cambridgeshire District Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

NO_2 monitoring was undertaken at 31 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.'

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 33%. Due to Covid-19 impacting the changeover of diffusion tubes data capture was between 33% and 75% for all diffusion tube sites in 2020 and therefore all sites were annualised. Annualisation was carried out using the Diffusion Tube Data Processing Tool, with details provided in Table C.2.1.

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 0.77 to the 2020 monitoring data. A summary of bias adjustment factors used by South Cambridgeshire District Council over the past five years is presented in Table C.1.

The national bias adjustment factor was used due to no local co-location studies being available in 2020 that meet the criteria for applying a local bias adjustment factor over a national factor, as per Box 7.11 of LAQM.TG16.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/21

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2021
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List. If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List. If a year is not shown, we have no data[2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu g/m^3$)	Automatic Monitor Mean Conc. (Cm) ($\mu g/m^3$)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2020	R	East Suffolk Council	12	30	25	19.6%	G	**0.84**
SOCOTEC Didcot	50% TEA in acetone	2020	UB	Canterbury City Council	10	13	10	28.1%	G	**0.78**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Canterbury City Council	9	26	20	29.6%	G	**0.77**
SOCOTEC Didcot	50% TEA in acetone	2020	UB	Kingston upon Hull City Council	12	24	18	34.8%	G	**0.74**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Ipswich Borough Council	12	27	21	28.5%	G	**0.78**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Ipswich Borough Council	12	36	26	36.3%	G	**0.73**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Thanet District Council	9	20	17	21.2%	G	**0.83**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Medway Council	12	26	18	41.7%	G	**0.71**
SOCOTEC Didcot	50% TEA in acetone	2020	B	Medway Council	11	20	10	96.3%	G	**0.51**
SOCOTEC Didcot	50% TEA in acetone	2020	B	Gravesham Borough Council	12	23	22	5.6%	G	**0.95**
SOCOTEC Didcot	50% TEA in acetone	2020	B	Gravesham Borough Council	12	27	24	16.1%	G	**0.86**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Monmouthshire County Concil	10	32	24	35.3%	G	**0.74**
SOCOTEC Didcot	50% TEA in acetone	2020	UI	North Lincolnshire Council	13	18	14	26.6%	G	**0.79**
SOCOTEC Didcot	50% TEA in acetone	2020	R	City of York Council	12	24	19	29.0%	G	**0.78**
SOCOTEC Didcot	50% TEA in acetone	2020	R	City of York Council	11	22	17	34.3%	G	**0.74**
SOCOTEC Didcot	50% TEA in acetone	2020	R	City of York Council	12	33	23	40.4%	G	**0.71**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Cambridge City Council	10	30	20	47.6%	G	**0.68**
SOCOTEC Didcot	50% TEA in acetone	2020	R	Wrexham County Borough Council	9	17	13	26.6%	G	**0.79**
SOCOTEC Didcot	50% TEA in acetone	2020	KS	Marylebone Road Intercomparison	11	59	43	38.0%	G	**0.72**
Socotec Didcot	50% TEA in acetone	2020	R	Horsham District Council	10	23	23	2.2%	G	**0.98**
Socotec Didcot	50% TEA in acetone	2020	R	Horsham District Council	12	22	19	18.6%	G	**0.84**
Socotec Didcot	50% TEA in acetone	2020	R	Horsham District Council	9	25	18	42.0%	G	**0.70**
SOCOTEC Didcot	50% TEA in acetone	2020		**Overall Factor[3] (22 studies)**				**Use**		**0.77**

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.77
2019	National	03/20	0.75
2018	National	-	0.76
2017	National	-	0.77
2016	National	-	0.77

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/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 diffusion tube NO_2 monitoring locations within South Cambridgeshire required distance correction during 2020.

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/.

Automatic Monitoring Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 33%. Annualisation was required for Impington PM_{10} data and Orchard Park $PM_{2.5}$ data due to data capture of 73.28% and 73.85% respectively. Details are provided in Table C.2.2.

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be 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 required distance correction during 2020.

Table C.2.1 – Diffusion Tube Annualisation Summary (concentrations presented in µg/m³)

Site ID	Annualisation Factor Orchard Park	Annualisation Factor Wicken Fen	Annualisation Factor Northampton Spring Park	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT1	0.8237	0.8229	0.7885		0.8117	18.2	14.8	
DT2	0.8093	0.7857	0.7705		0.7885	32.4	25.5	
DT-28N	0.8646	0.8722	0.8185		0.8518	28.6	24.4	
DT4	0.8487	0.8393	0.8035		0.8305	25.8	21.4	
DT5	0.8487	0.8393	0.8035		0.8305	16.9	14.1	
DT-6N	0.8487	0.8393	0.8035		0.8305	23.6	19.6	
DT7	0.8487	0.8393	0.8035		0.8305	13.4	11.1	
DT-8N	0.8487	0.8393	0.8035		0.8305	19.2	16.0	
DT9	0.8646	0.8722	0.8185		0.8518	20.2	17.2	
DT10	0.7714	0.7657	0.7311		0.7561	26.4	20.0	
DT11	1.0397	1.0695	0.9421		1.0171	19.1	19.4	
DT12	0.8646	0.8722	0.8185		0.8518	19.4	16.5	
DT13	0.8487	0.8393	0.8035		0.8305	18.0	15.0	
DT14	0.8487	0.8393	0.8035		0.8305	31.6	26.3	

Site ID	Annualisation Factor Orchard Park	Annualisation Factor Wicken Fen	Annualisation Factor Northampton Spring Park	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT15	0.8646	0.8722	0.8185		0.8518	20.4	17.4	
DT17	0.9227	0.9094	0.8447		0.8922	15.1	13.4	
DT-32N	0.9138	0.9291	0.8730		0.9053	27.2	24.6	
DT20	0.9227	0.9094	0.8447		0.8922	20.3	18.1	
DT21	0.8646	0.8722	0.8185		0.8518	19.7	16.8	
DT22	0.8646	0.8722	0.8185		0.8518	20.2	17.2	
DT23a	0.9227	0.9094	0.8447		0.8922	-	-	*Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only*
DT23b	0.9227	0.9094	0.8447		0.8922	-	-	*Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only*
DT23c	0.9227	0.9094	0.8447		0.8922	15.4	13.7	*Triplicate Site with DT23a, DT23b and DT23c - Annual data provided for DT23c only*
DT26	0.8487	0.8393	0.8035		0.8305	20.6	17.1	
DT27	1.0260	1.0122	0.9379		0.9921	17.7	17.6	
DT28	0.9227	0.9094	0.8447		0.8922	20.6	18.3	
DT29	0.8487	0.8393	0.8035		0.8305	13.1	10.8	
DT-30N	0.9227	0.9094	0.8447		0.8922	17.8	15.9	
DT-LN1	0.8646	0.8722	0.8185		0.8518	21.2	18.1	

Site ID	Annualisation Factor Orchard Park	Annualisation Factor Wicken Fen	Annualisation Factor Northampton Spring Park	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT-LN2	0.9138	0.9291	0.8730		0.9053	17.1	15.5	
DT-LN3	0.8646	0.8722	0.8185		0.8518	13.7	11.7	
DT-LN4	0.8646	0.8722	0.8185		0.8518	15.0	12.8	
DT-LN5a	0.8487	0.8393	0.8035		0.8305	-	-	*Triplicate Site with DT-LN5a, DT-LN5b and DT-LN5c - Annual data provided for DT-LN5c only*
DT-LN5b	0.8487	0.8393	0.8035		0.8305	-	-	*Triplicate Site with DT-LN5a, DT-LN5b and DT-LN5c - Annual data provided for DT-LN5c only*
DT-LN5c	0.8487	0.8393	0.8035		0.8305	25.5	21.2	*Triplicate Site with DT-LN5a, DT-LN5b and DT-LN5c - Annual data provided for DT-LN5c only*

Table C.3.2a – Automatic Monitoring Annualisation Summary – Impington PM_{10} (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Orchard Park	Annualisation Factor Norwich	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
Impington (PM_{10})	1.05	1.10	1.08	14.0	15.1	*Rounded to 15 for reporting purposes to match other continuous monitors*

Table C.4.2b – Automatic Monitoring Annualisation Summary – Orchard Park $PM_{2.5}$ (concentrations presented in µg/m^3)

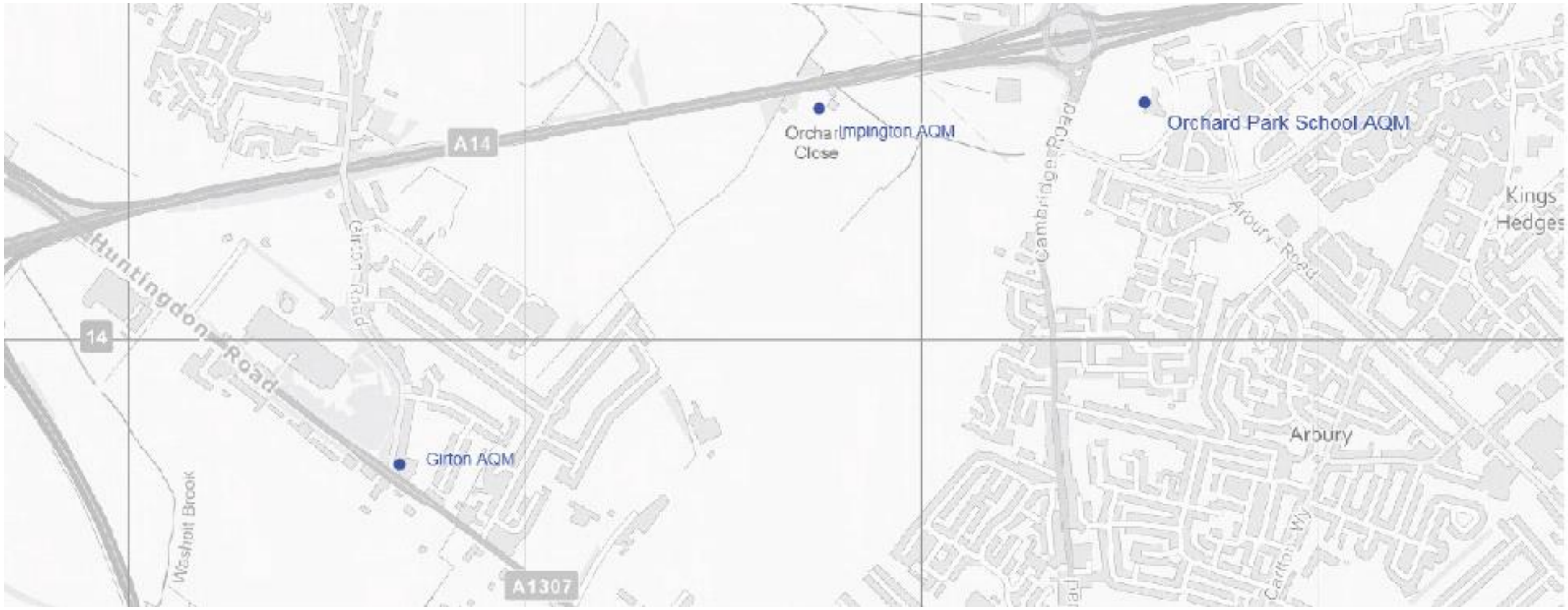
Site ID	Annualisation Factor Northampton Spring Park	Annualisation Factor Norwich	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
Orchard Park ($PM_{2.5}$)	1.01	1.02	1.01	12.5	12.6	*Rounded to 13 for reporting purposes to match other continuous monitors*

Table C.5.3 – Automatic Monitoring Annualisation Example Calculation – Orchard Park $PM_{2.5}$ (concentrations presented in µg/m^3)

Background Site	Annual Mean (Am)	Period Mean (Pm)	Ratio Am/Pm
Northampton Spring Park	10.32	10.25	1.01
Norwich Lakenfields	8.29	8.13	1.02
Average factor:			1.01

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

Figure D.1 – Map of Automatic Monitoring Sites



Note: Impington and Orchard Park sites are located in the AQMA.

Figure D.2 – AQMA

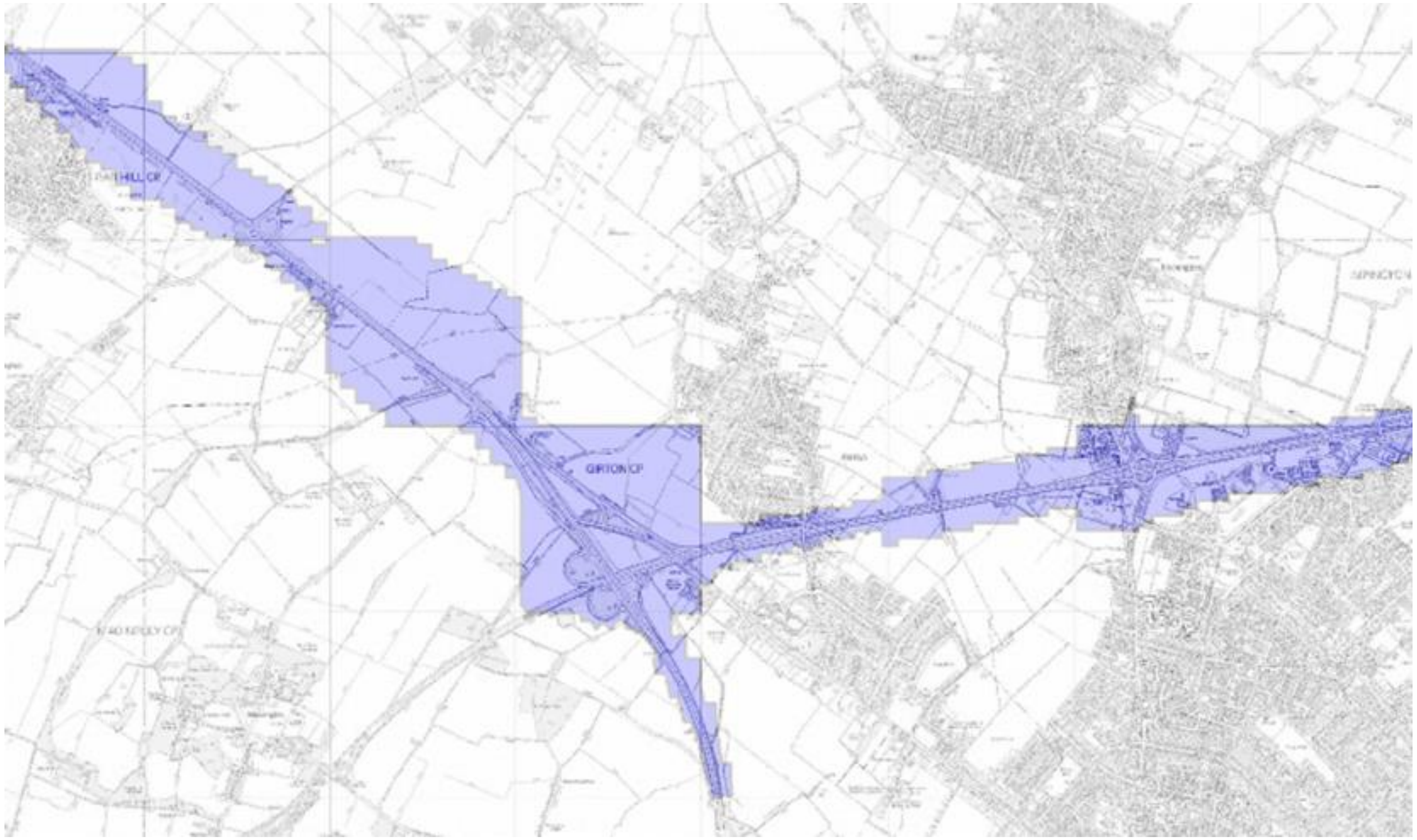
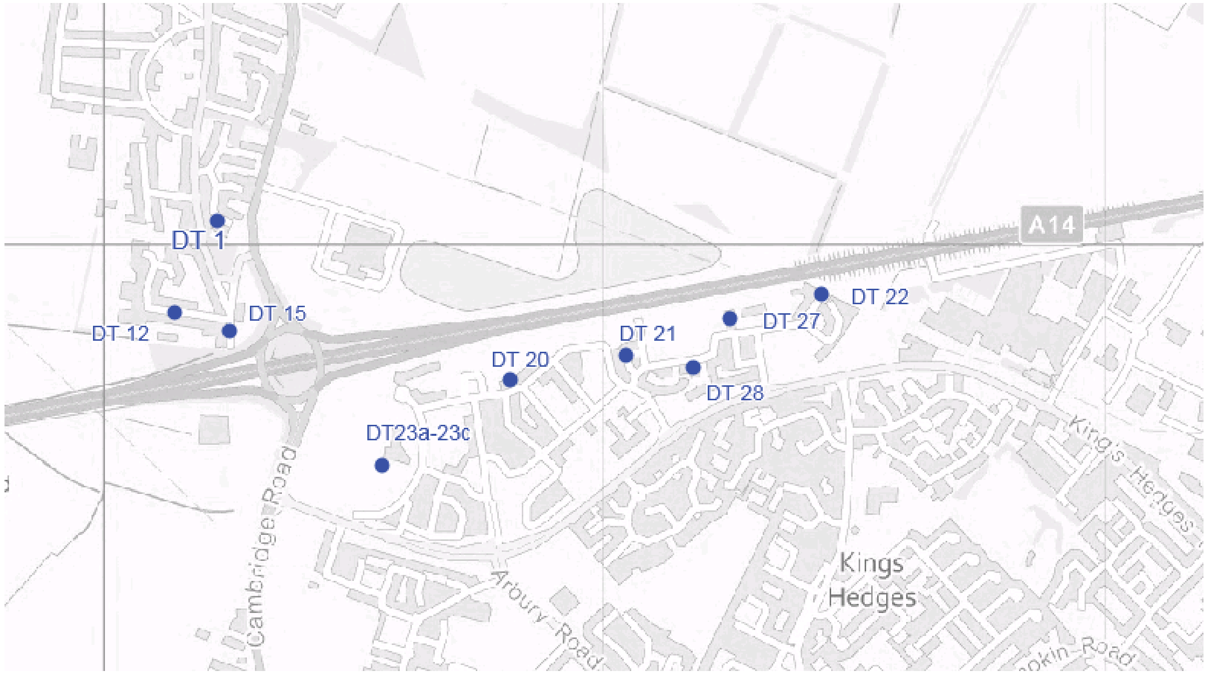
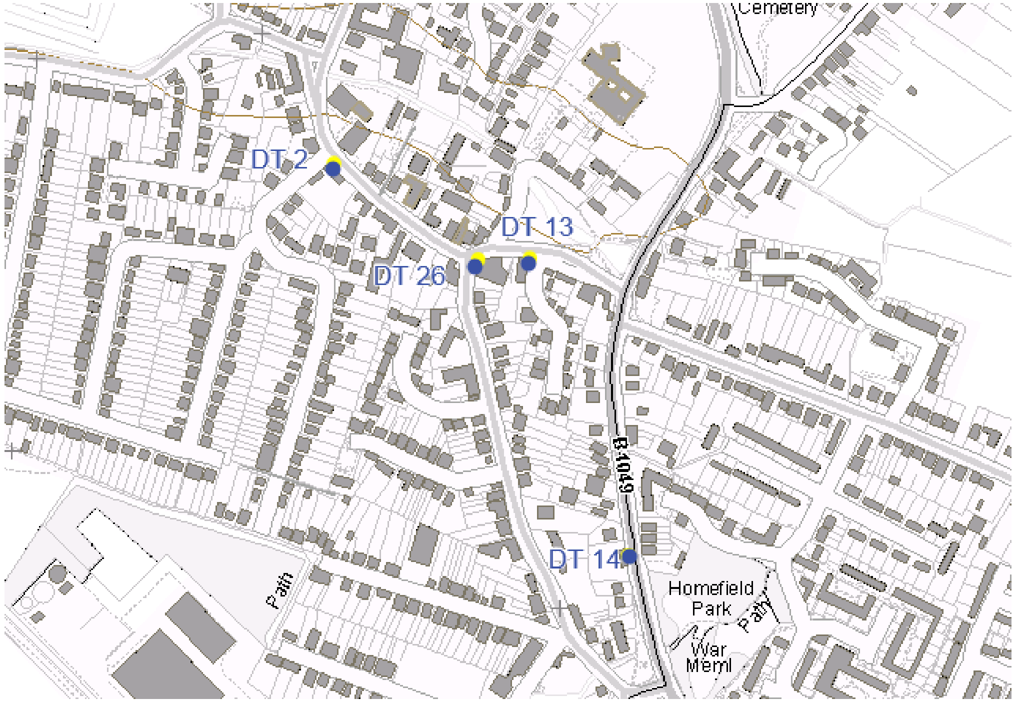


Figure D.3 – Map of Non-Automatic Monitoring Site

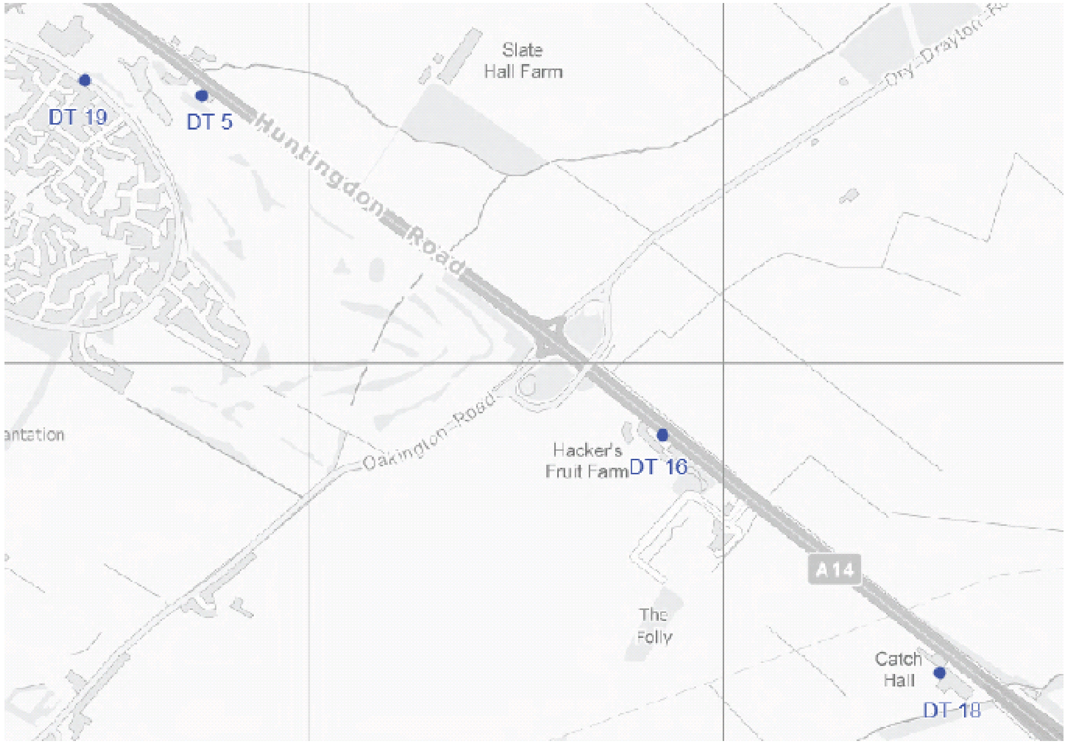
Diffusion Tube Locations – Orchard Park and Impington (all in AQMA)



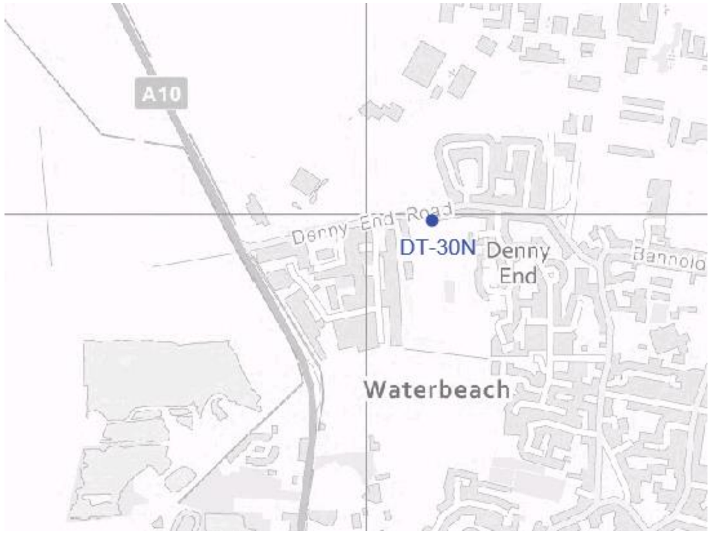
Diffusion Tube Locations – Histon

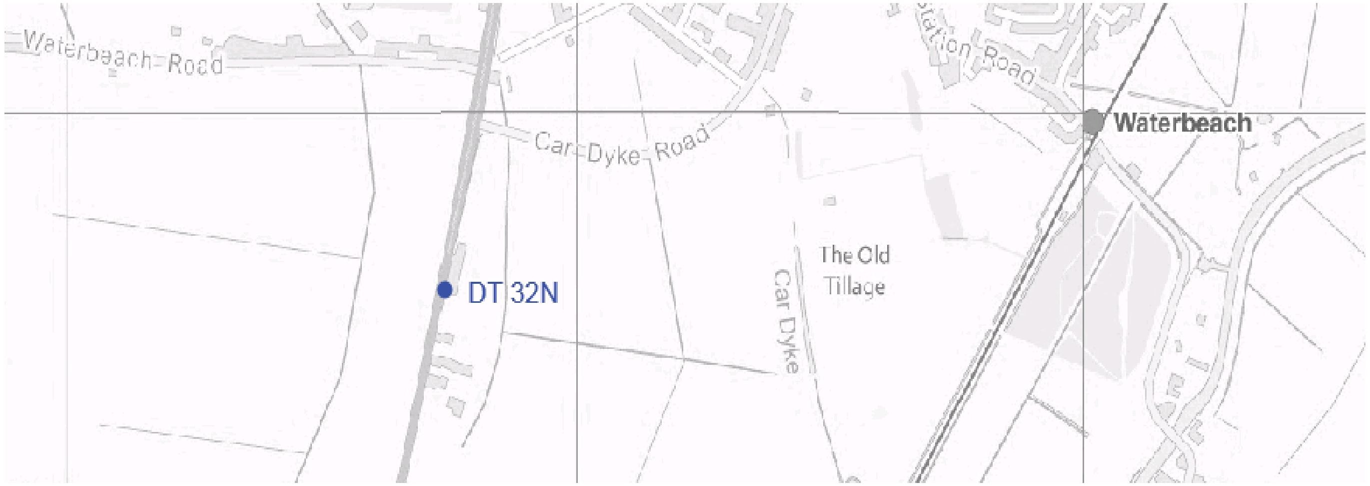


Diffusion Tube Locations – Bar Hill & A14 (in AQMA)



Diffusion Tube Locations – Waterbeach & A10

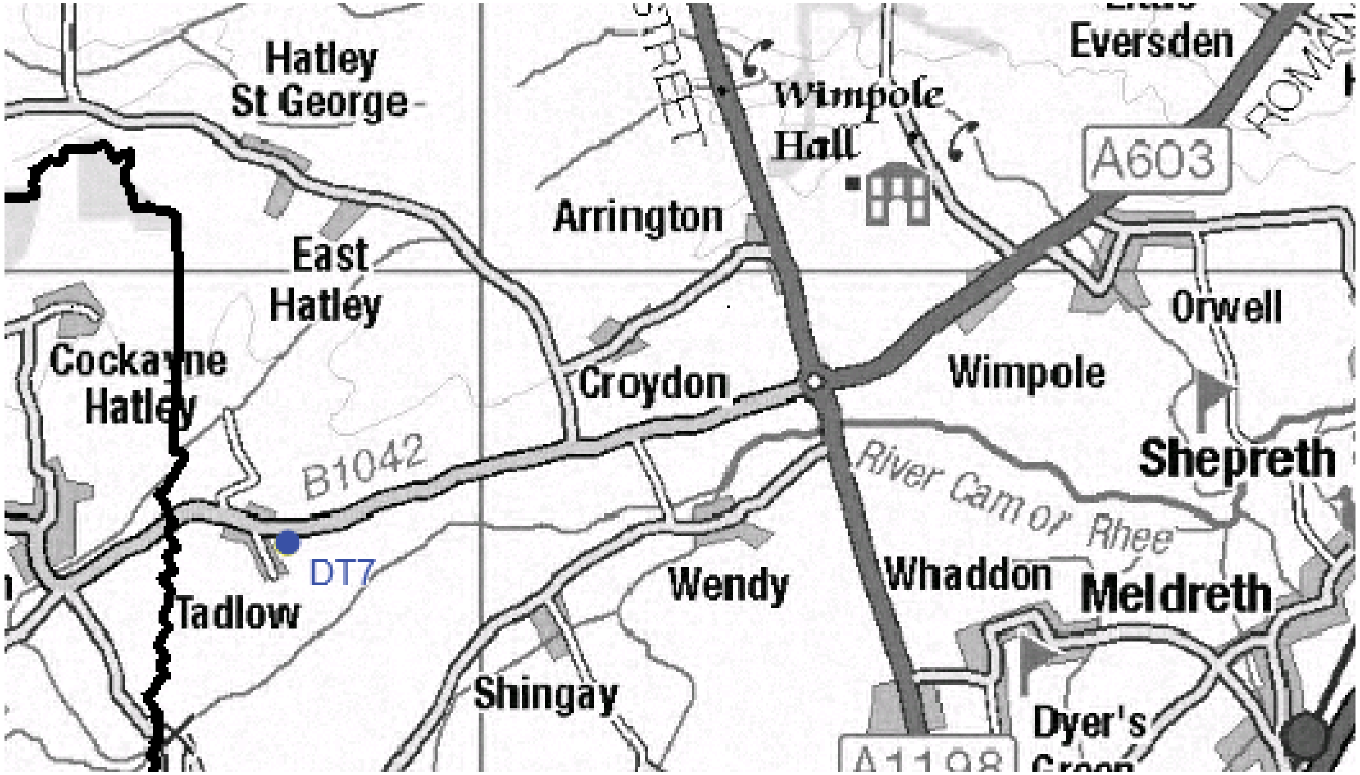




Diffusion Tube Locations – Milton

Diffusion Tube Locations – South of District

Diffusion Tube Locations – Tadlow



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[15]

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

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

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[16] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[17] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

[16] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[17] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within South Cambridgeshire

Ricardo Energy and Environment provided a report on the COVID-19 Lockdown Effects on Air Quality in South Cambridgeshire. As seen in Figures F.1 – F.3 (extracted from report), below, it shows a clear decrease in monthly NO_2 concentrations compared to both 2019 concentrations and modelled 'business as usual' 2020 concentrations which would have been expected. This is particularly noticeable during the first Lockdown in Spring–Summer 2020.

Figure F.1 – Annual average NO_2 concentrations for all continuous monitor sites comparing 2020, 2019 and 2020 measured concentrations and 2020 'Business As Usual' modelled concentrations.

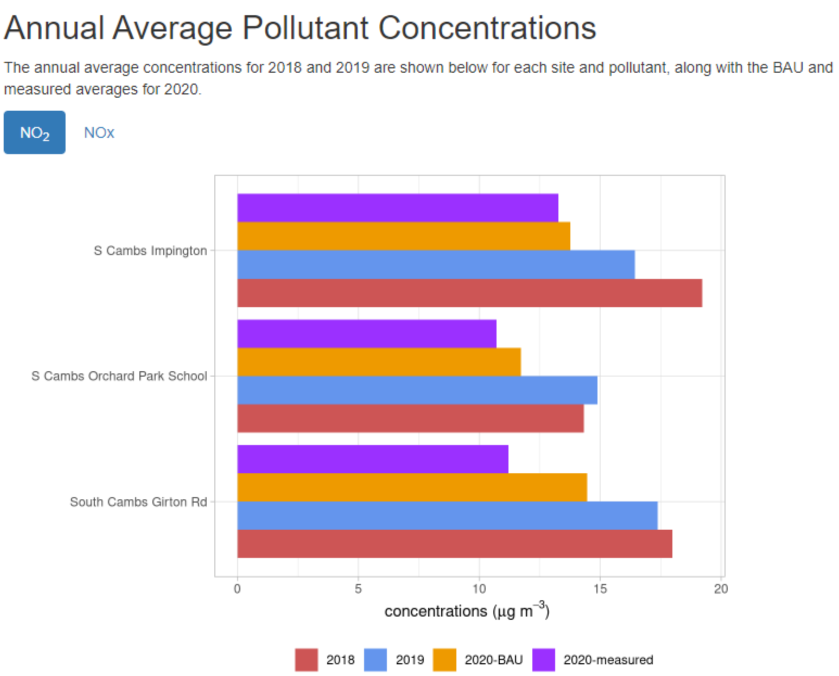
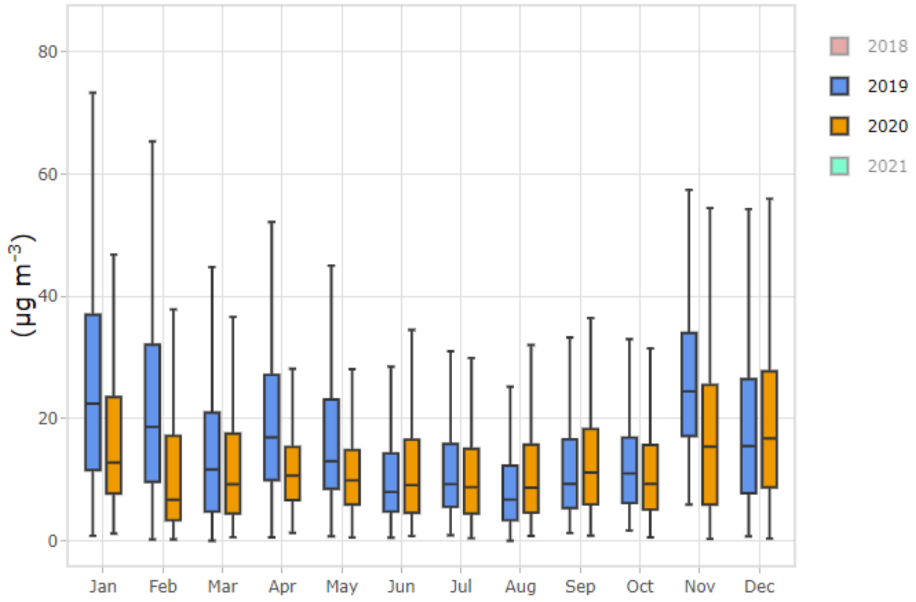


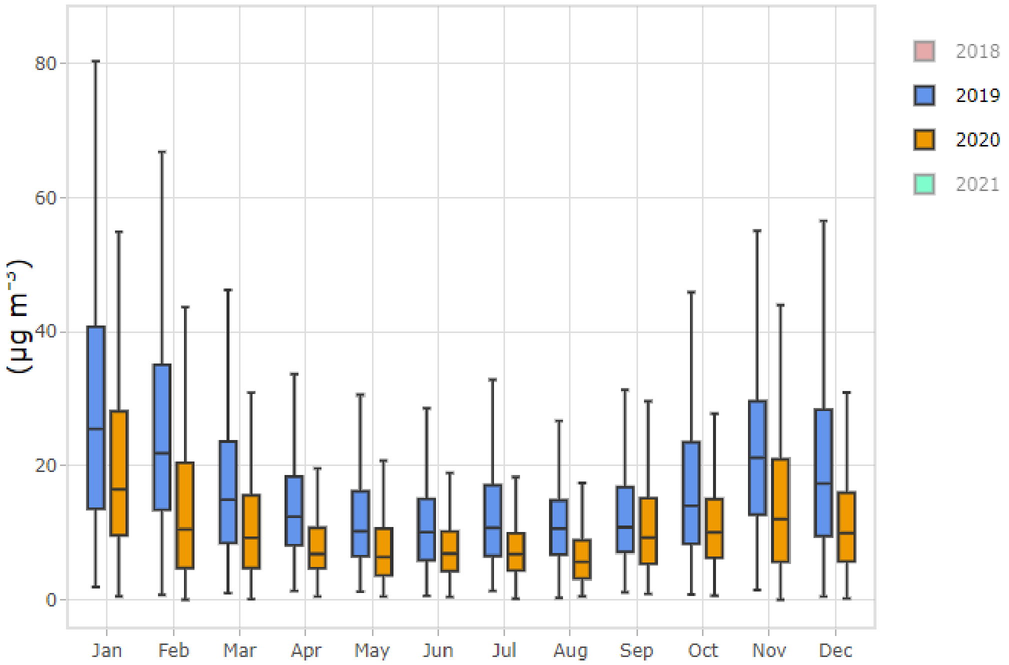
Figure F.1 shows that the annual average concentration was lower than both the 2019 measured concentrations and modelled 'business as usual' 2020 concentrations at all sites. This was particularly noticeable at the Girton Road Site, which is along a main road into Cambridge which is a common commuter route into the city. This site was therefore likely to be significantly impacted by the lockdowns and people working from home.

Figure F.2 – Measured monthly average NO_2 concentrations for 2019 and 2020

a) Impington



b) Girton Road



c) Orchard Park

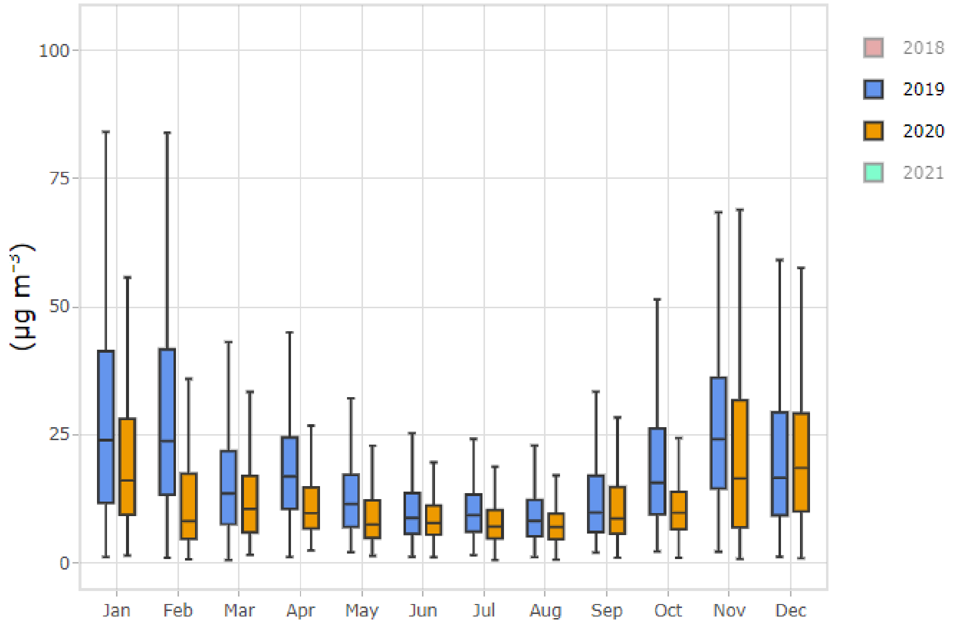
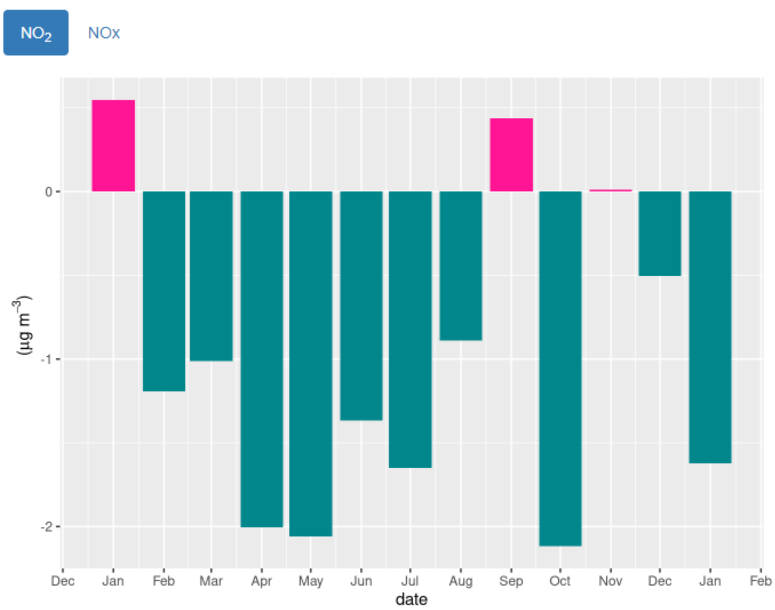


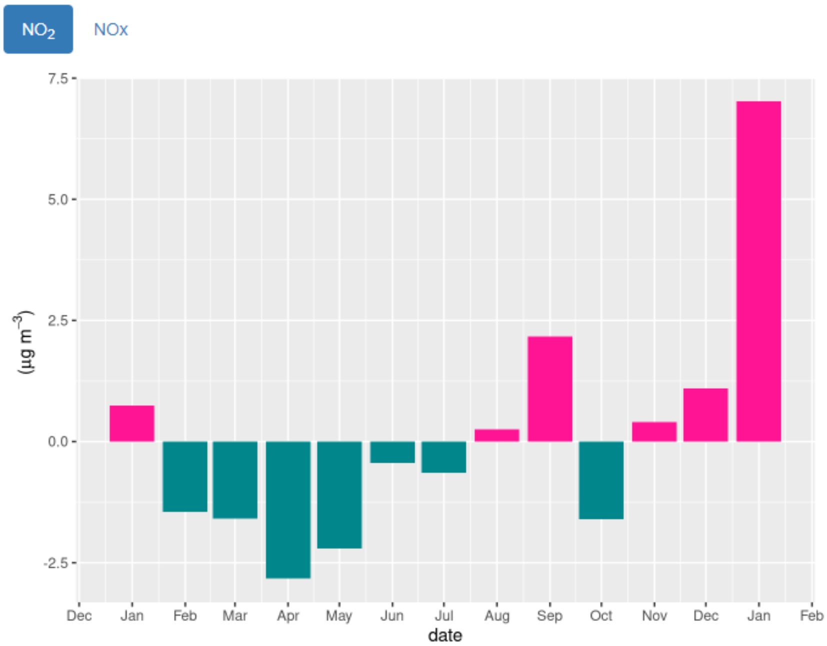
Figure F.2 shows that for almost all months at all sites the measured NO_2 concentrations were lower in 2020 than 2019. This can largely be attributed to the impacts of Covid-19, however the generally lower concentrations also seen in other months suggests that concentrations continue to fall generally.

Figure F.3 – Difference between measured monthly average and modelled 'business as usual' NO_2 concentrations for 2020 (pink bar represents measurements greater than modelled concentrations and green bars represent measurements lower than modelled concentrations)

a) Orchard Park



b) Impington



c) Girton

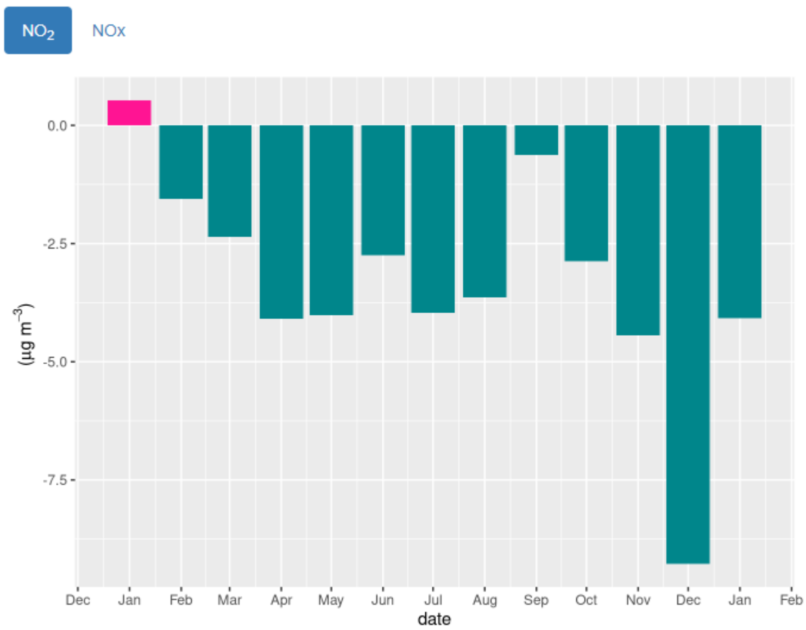


Figure F.3 shows that for all sites the measured concentration was lower than the modelled 2020 ‘business as usual’ concentration for the majority of months, especially during the lockdown period, as a result of Covid-19. Figure F.3a shows that the magnitude of change was lower at the Orchard Park site than the roadside sites, as would be expected at a background site which experiences less impact from road traffic. The sustained measured concentrations below the modelled business as usual concentrations (c) at the Girton Road site (along a common commuter route into Cambridge) could reflect a sustained trend towards working from home, whereas the Impington site is by the A14 major road which could be more likely to have seen a return towards 'normal' traffic levels.

The full report can be viewed at: https://www.airqualityengland.co.uk/assets/reports/316/SouthCambridge_report_covid_analysis.html

Opportunities Presented by COVID-19 upon LAQM within South Cambridgeshire

No LAQM related opportunities have arisen as a consequence of COVID-19 within South Cambridgeshire.

Challenges and Constraints Imposed by COVID-19 upon LAQM within South Cambridgeshire

The main challenging impact of Covid-19 related to the changeover of diffusion tubes, particularly during the first lockdown. A combination of access issues, and staff availability due to shielding and resourcing focuses resulted in no diffusion tube changeovers or data for the period March – July 2020. This resulted in all sites having data capture below 75%, therefore all sites required annualisation for 2020. Data capture ranged from 36.5% to 58.3% making this a **Small–Medium Impact** as per the LAQM Impact Matrix provided within Table F 1.

In addition, there were impacts on actions, such as delays to the revocation of the AQMA and cabinet approval and publication of the new Air Quality Strategy, which had been anticipated to happen in 2020, due to a shift in focus to Covid-19. It is anticipated that these will be progressed during 2021. This is a **Small–Medium Impact.**

The impacts as presented above are aligned with the criteria as defined in Table F 1, with professional judgement considered as part of their application.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

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 Highways England
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.TG16. April 2021. 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.PG16. May 2016. 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)