2021 Air Quality Annual Status Report (ASR)

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

Date: October 2021

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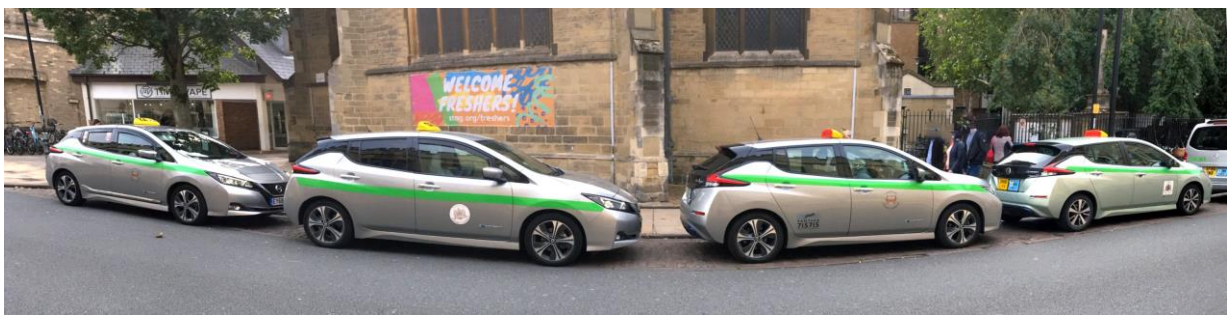
Report Reference Number	ASR 2021
Date	June 2021



Four Electric Hackney Carriage Vehicles at the main taxi rank in Cambridge

Signed off by

Robert Pollock	Chief Executive, Cambridge City Council
Joel Carré	Head of Environmental Services, Cambridge City Council
Jeremy Smith	Group Manager, Transport Strategy and Funding, Cambridgeshire County Council
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[1] The Public Health team do not have the capacity to review and sign off the ASRs for the Cambridgeshire district councils. The team will engage with this part of the LAQM process fully next year when the impacts of the COVID-19 pandemic have reduced, and capacity allows. Note that the PH team are involved in the AQAP Steering Group and remain in regular contact with the EQG team.

Executive Summary: Air Quality in Our Area

Air Quality in Cambridge

Air pollution is associated with several 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 community equality issues because areas with poor air quality are also often less affluent areas[2,3]. Air pollution is harmful for human health at all levels, including below the legal limits, so it is important to do what we can to continue to improve air quality.

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[4], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[5]. The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[6].

What is the air quality like in Cambridge?

This is a question that we are often asked, and the answer is that "it varies". Air quality tends to be better in the suburbs and away from busy roads than in the busy, narrow city centre streets and along the inner ring roads, and on roads with high traffic levels. The centre of Cambridge has been within a statutory Air Quality Management Area since 2004.

Air quality has been improving, slowly, in most parts of Cambridge in recent years, but there are parts of the city, including the busy central streets, where levels of nitrogen dioxide (NO_2) continue to be high. The main source of nitrogen dioxide in Cambridge is from vehicle emissions, so out air quality improvement work focuses on ways to reduce

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2 Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

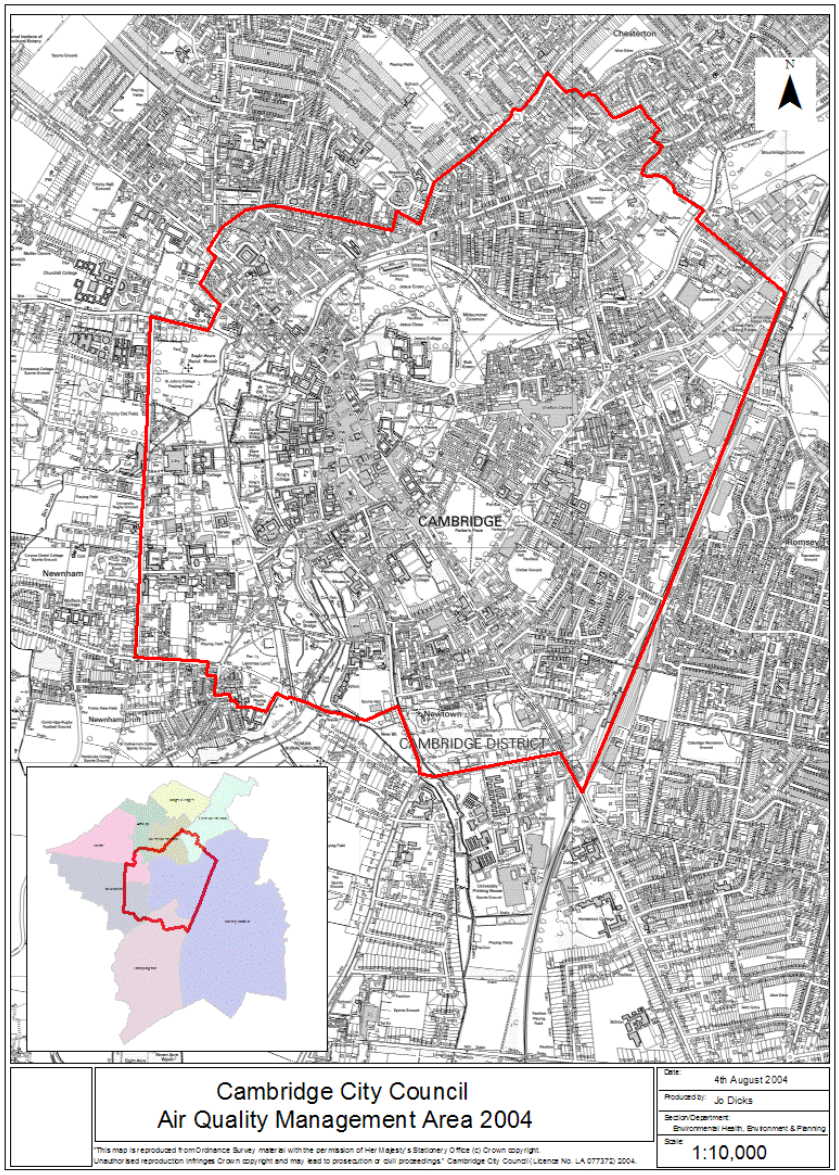
4 Defra. Air quality appraisal: damage cost guidance, July 2020

5 Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

6 Defra. Abatement cost guidance for valuing changes in air quality, May 2013

these emissions, as well as reducing other sources of air pollution. There are also legal limits for small particles, known as PM_{10} (particulate matter of diameter less than or equal to 10 micrometres or microns). The levels of PM_{10} in Cambridge are below the legal limits. The levels of $PM_{2.5}$ are close to the World Health Organisation (WHO) standards.

Public Health data indicates that in 2019, 43 deaths in Cambridge (5.6%) could be attributed to Particulate Air Pollution.



Air Quality in 2020

The trends noted from the recorded levels of air pollution in 2020 indicate that levels of nitrogen dioxide in Cambridge were considerably lower than in 2019. This agrees with the

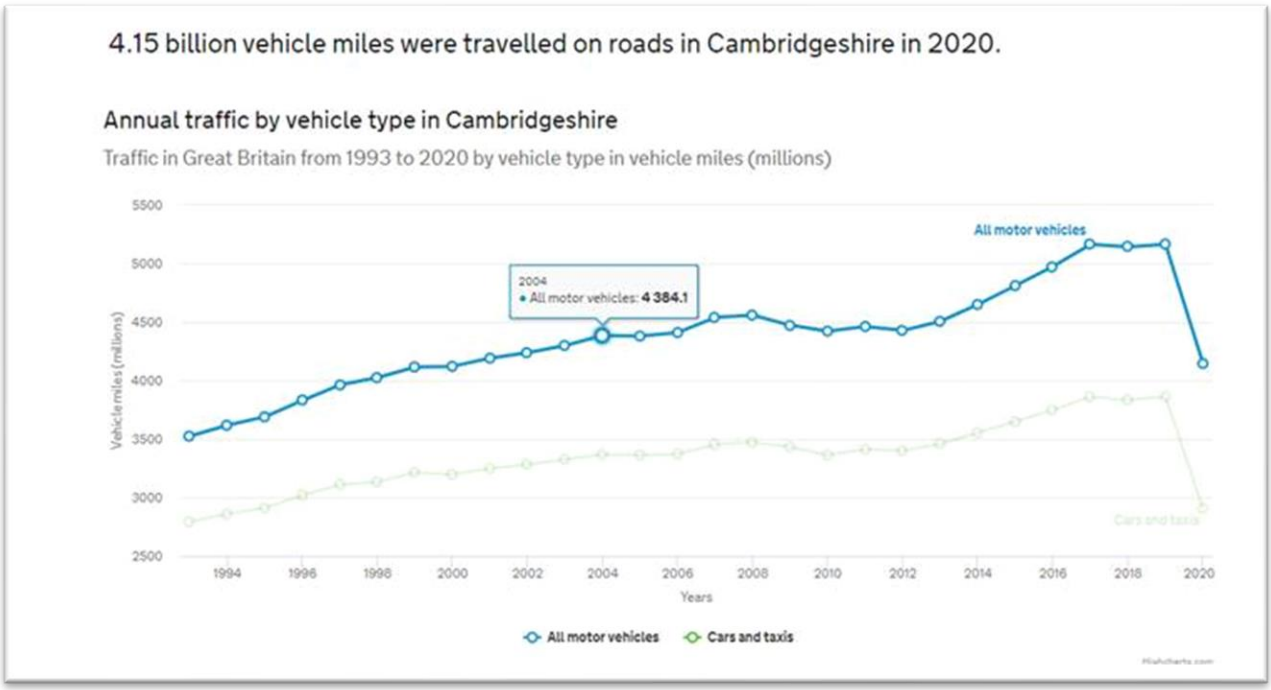
national trend and is attributed to the reduction in traffic as a result of COVID-19 restrictions.

The Department for Transport and Cambridgeshire County Council data for 2020 record significantly lower traffic counts than in 2019.

The Traffic Monitoring Report for 2020 reports 20% less traffic on the Radial screen line (traffic coming into and going out of Cambridge) and 17% less on Cam screen line (traffic coming into the central part of Cambridge).

Over the whole year, traffic levels recorded by DfT were 4.15 billion vehicle miles in Cambridgeshire, down by 20% from 5.16 billion in 2019. The chart below shows the increase in vehicle miles in Cambridgeshire from 1994 (3.5 billion miles) to 2019 and 2020.

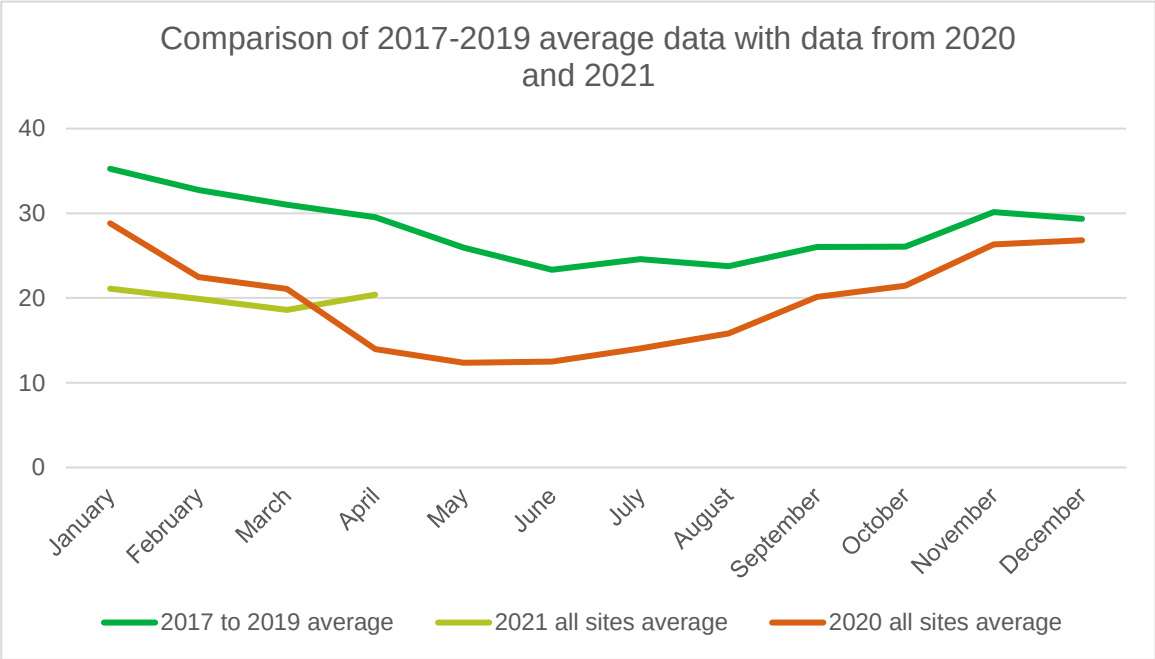
Figure 1 Traffic levels from 1994 to 2020



The lockdown impact on air pollution levels was most noticeable in areas where traffic/air pollution is higher, and less noticeable away from busy roads. The impact was recorded at all air quality monitoring locations across Cambridge, all measuring sites showed lower air pollution than would have been otherwise expected.

This graph shows the average of the nitrogen dioxide levels from the three years before the pandemic (top line in bright green) plotted against the measured air pollution levels in 2020 (second line down in orange) and 2021 (third line down in lime green). Measured nitrogen dioxide levels in 2020 were already slightly below the average of the previous three years but dropped significantly when the lockdown restrictions were in place.

Figure 2 Comparison of Nitrogen Dioxide levels before and during the pandemic

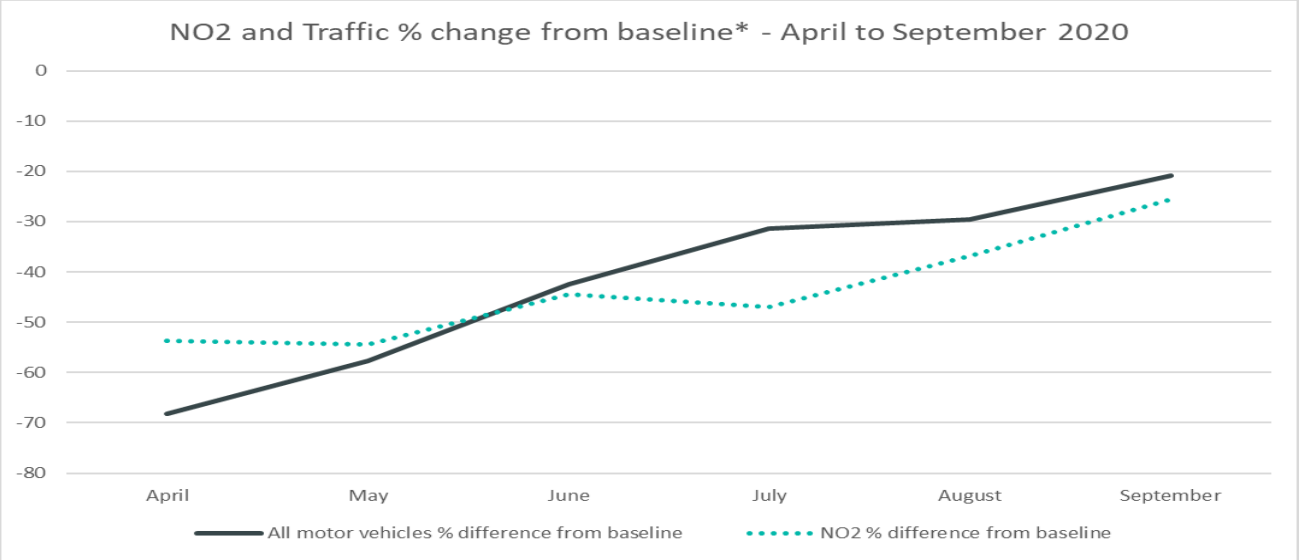


The Greater Cambridge Partnership (GCP) recorded a variety of transport related indicators from the beginning of the lockdown period. The next graph shows the difference in vehicle numbers compared with a neutral baseline of October 2019 (solid black line) plotted against the difference in air pollution compared with the previous three-year average. The chart shows two almost parallel lines demonstrating a clear link between fewer motor vehicles and lower levels of air pollution. As motor vehicles increased on the road, average NO2 levels across all sites consequently increased, bringing levels closer to the baseline.

Air Quality data for 2020 is provided in Chapter 3 and Appendix A.

More information on the impacts of COVID-19 lockdown periods is provided in Appendix F.

Figure 3 Monthly % change in recorded NO2 and change in recorded motor vehicles (GCP graph)



Recorded levels of particulate matter in 2020 fell slightly, unlike recent years where levels of particulate matter have remained stable. This corresponds with the national trend. Only a small proportion of overall particulate matter in Cambridge air is related to vehicular traffic, so the significant drops in traffic levels during lockdown periods has had only a small impact on overall particulate pollution levels in the city.

Levels of all measured pollutants are currently below their respective national air quality objectives levels. However, we know that air pollution is harmful for human health at all levels, so we continue to work with our air quality management partners to achieve lower levels.

Local 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.

Nationally, the 2019 Clean Air Strategy sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero sets out the approach to reduce exhaust emissions from road transport through several 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.

Locally, planning and action to improve air quality involves working with a range of public sector partners, as different authorities are responsible for different areas of activity.

Cambridge City Council (CCiC) is the local authority with the legal responsibility to improve air quality in Cambridge city. Cambridgeshire County Council (CCC) has been responsible for traffic management, highways, public transport and improving public health and, as such, has a legal responsibility to work with the City Council and to the development and monitoring of actions to improve air quality in the city. Both councils have worked together for more than 15 years to bring in measures to improve the city's air quality. The Greater Cambridge Partnership (GCP) is the local delivery body for a City Deal with central Government, bringing powers and investment worth up to £1 billion over 15 years to deliver vital improvements in infrastructure and support the creation of new jobs, new homes and apprenticeships. The GCP aims to develop a sustainable transport network for the Greater Cambridge area (Cambridge and South Cambridgeshire) that keeps people and businesses physically connected as the area continues to grow. The GCP focusses on improvements to public transport and active travel modes, such as cycling and walking. The more recently formed Cambridgeshire and Peterborough Combined Authority (CPCA), led by an elected Mayor, has adopted the strategic responsibilities for highways, traffic and public transport. CPCA officers are now fully engaged with the Cambridge Air Quality Action Planning process.

In 2017, we developed an Air Quality Action Plan with Cambridgeshire County Council and the GCP, which sets out how we can reduce polluting emissions in the city, with cleaner air for all residents, visitors and workers in the city.

The new Plan for Cambridge was approved unanimously at the Environment Scrutiny Committee in 2018. This plan sets out the council's priorities, for the next five years, for improving areas of poor air quality, and maintaining areas of good air quality across the city, as Cambridge continues to grow.

The proposed actions fall into three main categories:

1. **Reducing local traffic emissions as quickly as possible to meet national objectives.** Proposals in this area include:

- Lowering emissions from taxis, by increasing the number of ultra-low and zero emission taxis through incentives and installation of more electric vehicle charging points;
- Reducing bus and coach emissions, by working with partners to invest in more low emission vehicles;
- Reducing HGV emissions in the city centre, by promoting 'greener' methods for making deliveries of goods, such as by cycle.

2. **Maintaining levels of pollutants below national objectives**, including by using planning policies to ensure new communities are designed to make it easy for people to use sustainable modes of transport.

3. **Improving public health** - educating people about the health impacts of poor air quality and encouraging them to make changes to their lifestyles, including by shifting to more active modes of transport like walking and cycling.

Conclusions and Priorities

The trends noted from the recorded levels of air pollution in 2020 indicate that levels of nitrogen dioxide were significantly lower in 2020 than in previous years. Measured levels of overall air particulate pollution fell slightly. The changes in overall air pollution levels show the positive impact of significant traffic reduction.

Given, the above impacts, no changes to the Air Quality Management Area are proposed at this time.

Priorities

- Priority - Our key priority in 2021 is to continue with the measures already underway and start work on new measures in accordance with our Air Quality Action Plan. Most workstreams have been impacted by COVID-19 related delays, whether developing new and secure ways of working, or through absence from work.
- Challenge - Future improvements in air quality are dependent on supporting the switch from internal combustion engine to low emission vehicles for both private and public fleets.
- Challenge - Air quality will continue to remain under pressure because of continued significant population, housing and business growth in and around Cambridge.
- Action - We will continue to pursue actions to improve air quality in the city, taking advantage of partnership development and external funding opportunities to develop and deliver further measures.
- Action - We will continue to work with developers and communities to ensure that new developments minimise harmful impact on air quality.
- Action – We will continue to work with the Greater Cambridge Partnership and the Cambridgeshire and Peterborough Combined Authority to support strategic transport planning and infrastructure investment.
- Action – We will continue to work with Cambridgeshire County Council on matters relating to the highways and public health.

Local Engagement and How to get Involved

Local Engagement

Regular articles on air quality are included in the Cambridge City Council magazine, Cambridge Matters, which is delivered free of charge to all residents. Information about air quality is provided on the Cambridge City Council website, including data directly from the main monitoring stations; Cambridgeshire County Council includes air quality information on its Cambridgeshire Insight information website.

Cambridge residents are very engaged with air quality issues and frequently raise questions or make suggestions via our email eqg@cambridge.gov.uk

How everyone can help to improve air quality

Everyone is affected by the quality of the air that we breathe, and everyone has a role to play to help to improve air quality in Cambridge. Here are some examples of what you can do:

- 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.
- Try using public transport, or try cycling or walking more often.
- Information on public transport around Cambridge can be found on the Cambridgeshire County Council website, as well as the Cambridgeshire and Peterborough Combined Authority website.
- My Bus Trip is a useful app for real-time bus information.
- MotionMap is a journey-planning app for travel by bus, train, walking and cycling; it's available from app stores. Citymapper includes Cambridge as part of its London mapping area.
- Walking and cycling help you to stay physically and mentally healthy plus save you money in fuel costs.
- When driving, use techniques that help you use less fuel, like driving more slowly and smoothly. You could use 10% less fuel and save money by following the tips on the AA website.

- Switch it off - turn off your engine if you are caught in a traffic jam or have to wait at level crossings; not only will this reduce your emissions, but you will save fuel too.
- Consider using an alternative fuel vehicle – More people than ever are buying electric vehicles. There are charging points at some of our car parks and plans are underway to introduce more to meet demand.
- If you own more than one car, consider if you could sell one and make use of a car club instead? As well as reducing air pollution, for many people this will save them money too. There are two car clubs in Cambridge. Enterprise has 34 vehicles for short or longer term use in Cambridge and Zipcar has 12.
- If you only own one car, could you switch more of your journeys to public transport, walking and cycling, and use a car club for those trips where you really need a car?
- Consider working at home as often as possible, or car sharing if you need to drive to work.
- Use less energy at home – wood, coal, oil and gas burning all contribute to air pollution.

If you would like to know more about air quality in Cambridge, please visit our air quality pages, contact us by phone on 01223 457900 or email eqg@cambridge.gov.

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Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Cambridge 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 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 Cambridge City Council and partners 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 Cambridge City Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Cambridge City Council.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and the air quality monitoring locations in relation to the AQMA. The air quality objective pertinent to the current AQMA designation is as follows: **NO_2 annual mean**

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
Cambridge	2004	NO2 Annual Mean	An area encompassing the inner ring road and all the land within it	NO	Parker St 49 (CM) Emmanuel St 59 (DT) micrograms per cubic metre	Parker St 24 (CM) Emmanuel St 20 (DT) micrograms per cubic metre	Cambridge Air Quality Action Plan, 2018	https://www.cambridge.gov.uk/air-quality-action-plan

☒ Cambridge City Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

☒ Cambridge City Council confirm that all current AQAPs have been submitted to Defra.

Progress and Impact of Measures to address Air Quality in Cambridge

Defra's appraisal of last year's ASR concluded that the Council and its partners have outlined an extensive range of measures to tackle local air quality and reported on progress undertaken during 2019. The Council is involved with the Greater Cambridge Partnership (GCP), which has facilitated a Clean Air Zone Feasibility Study, and held a Citizens Assembly in 2019. Additionally, the Council's priorities and challenges have been highlighted within the report. There was some discussion with Defra about the methodology applied in annualisation calculations and a piece of missing information about the local bias adjustment calculations; these were resolved, and the report was accepted.

Cambridge City Council and its' partners have taken forward several 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. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented in Table 2.2.

Most of the projects currently in the Air Quality Action Plan are already ongoing, completed, or longer term projects.

- Many new Active Travel projects were completed in 2020 as part of the councils' response to the pandemic. These were installed using Emergency Traffic Regulation Orders (ETRO); decisions on the future of the measures will be taken in autumn 2021. Details are in Appendix F.
- Cambridgeshire County Council completed its' Climate Change and Environment Strategy in 2020 which incorporates electrification of transport and EV infrastructure provision and will build on the work already undertaken by the Energy Investment Unit such as developing Smart Energy Grids at Babraham and St Ives Park & Ride sites.

Cambridge City Council and partners expect the following measures to be completed over the course of the next reporting year:

- Installation of the remaining OLEV-funded taxi charge points. One further charge point was installed in Cambridge in 2020, making a total of 9 charge points across 5 sites.

A further 3 charge points are close to being completed. This will bring the total up to 12 active charge points across 6 sites. Orders have been placed for the outstanding 9 charge points across 7 sites with all sites scheduled to be completed by the end of 2021. This will complete our project total of 21 charge points across 13 sites. These sites will now all be within Cambridge City. We investigated many sites within South Cambridgeshire but were unable to progress them due to high costs of connections, land ownership issues, and availability of sites in locations close to local services and likely taxi drop off/pick up points. All new saloon taxis licenced by Cambridge City Council must be ultra-low emission or electric from April 2021.

- Assessment of the Clean Air Zone options and/or any other interventions brought forward for implementation.
- The GCP, working with Cambridgeshire County Council has continued with an extensive programme of cycling and walking infrastructure improvements, some of which have been completed. These projects were delayed at the start of the COVID-19 pandemic but safe working practices were developed so that construction work could continue.

Cambridge's City Council's priorities for the coming year

- Continue to work with the GCP on the Clean Air Zone options. A Clean Air Zone of some type will be essential to reduce the emissions in central Cambridge.
- Continue to work with the GCP to ensure the impact on air quality of the proposed GCP interventions and projects is fully understood and considered as part of the review process.
- Work with the Cambridgeshire and Peterborough Combined Authority (CPCA) on all projects that will improve air quality, including the ZEBRA bid for 30 electric buses and the Local Transport Plan refresh.
- Complete the installation of rapid charge points for taxis.
- Continue to work with the County Council and other partners on a range on-street charging projects for residents and non-residents.
- Continue to work with the County Council and other partners on a range of environmental and climate change projects which have an impact on air quality.

- Continue to publicise ways to improve air quality.
- Develop new Air Quality Planning policies for the joint Local Plan. Ensure that requirements for Health Impact Assessments are included.
- Take advantage of any new funding opportunities that arise. For example, the CPCA has applied for funding to DfT for 30 new electric buses to provide a service on the Park and Ride and most frequent Citi bus routes in Cambridge as well as the installation of charging infrastructure at a depot and opportunity charging at Babraham P&R site, directly connected to a new Solar Farm. The GCP has offered to provide match funding of £2.25m for this bid. Cambridge City Council is providing support for this bid which will, if successful, result in a measurable drop in air pollution in Cambridge and mitigate the impacts of additional transport demands in the area.

Challenges

The principal challenge to implementation that Cambridge anticipates facing is growth in the city and its surrounding geographical area, known in planning terms as 'Greater Cambridge'. Cambridgeshire has one of the fastest growing economies and populations in Britain, with a 22% increase in population predicted between 2010 and 2031. In the past, much of the growth around Cambridge has been directed to the South Cambridgeshire villages beyond the Green Belt, resulting in a growth of commuting by car to Cambridge (50% of the Cambridge workforce commute into the city), as well as congestion and pollution. The population of Cambridge city has risen significantly in recent years with an approximate increase of 50% over the 40 years from 1981 to 2021. Future increases in population are predicted to continue in new communities on the edge and just outside of the city, such as at Northstowe (up to 10,000 dwellings) and Waterbeach (up to 12,000 dwellings) and associated, business, retail, community, leisure and sports uses; hotels; schools). Economic growth continues in the region with some business/scientific parks sites increasing the number and size of buildings as well as new business and science parks such as Cambridge Biomedical Campus (75,000m^2).

The increases in population and business growth will result in an increased demand for travel to/ from/within Cambridge city and thus further challenges to the air quality improvements that have been made in recent past. The GCP agreed powers and funding from Central Government, for public transport and active travel infrastructure improvements to help address these issues (City Deal programme). Even with increased

home working in the longer term, almost 60% of jobs in Cambridge cannot be done from home and most businesses are expecting employees to return to the workplace at least part time. The scale of additional growth in jobs in the area means that even with increased home working, we expect traffic levels and congestion to return to and then exceed pre pandemic levels. Continued investment in integrated public transport provision, including rail and low emission bus, will be essential to protect the city from the adverse impacts of commuter growth from these new communities.

Progress on the following measures has been slower than expected.

Most projects were delayed in some way for a variety of operational reasons during the pandemic – including the adoption of safe working practices, as well as staff and contractors being absent from work due to having to shelter or self-isolate. In addition, many County Council staff were seconded to work on the DfT Tranche One Active Travel projects - these are set out in Appendix F.

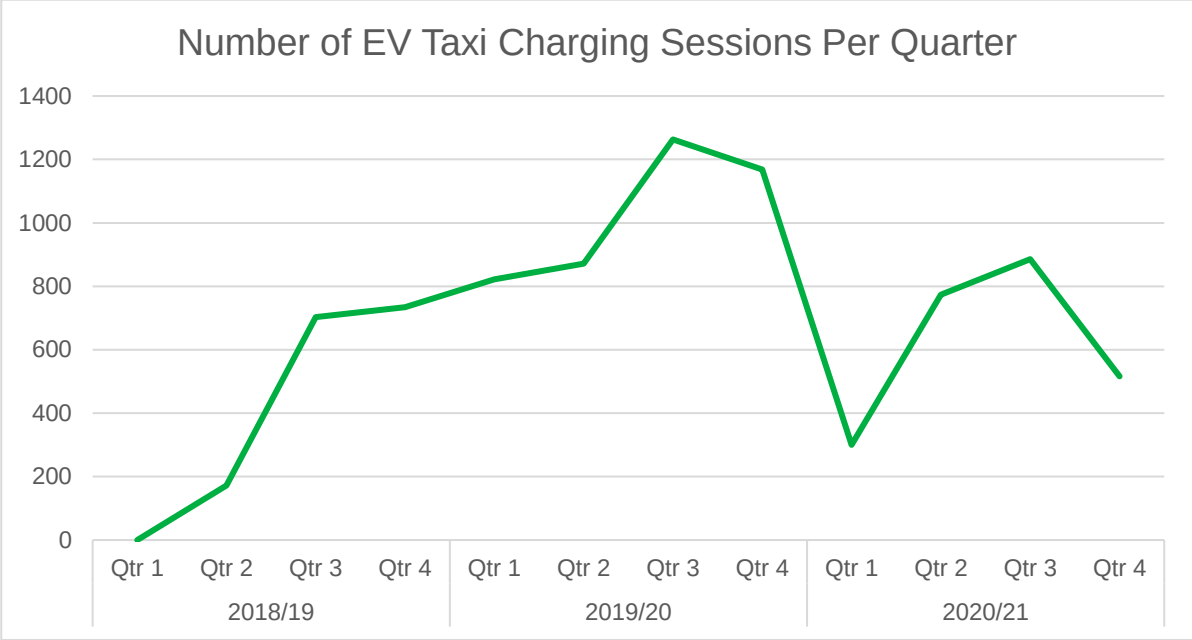
- The CPCA and GCP agreed to review some GCP approved projects to ensure that these are aligned with transport scheme needs and plans for the Combined Authority area.
    - The A428 Cambourne – Cambridge (C2C) Better Public Transport project was paused in 2018 for review by the Cambridgeshire and Peterborough Combined Authority (CPCA) in order to ensure compliance with the CAM proposals. In October 2018, the CPCA review concluded that GCP's work was robust and identified the optimal solution for the Cambourne to Cambridge corridor, as best delivering project objectives and aligning with future CAM project proposals. Route assessment continued in 2019 and was due to be presented to the GCP Executive Board in Spring 2020 but the scheme was again paused following intervention by CPCA. A further CPCA review considered alternative alignments but agreed that the GCP recommendation was better performing. In December 2020 the GCP Executive Board agreed to commission an Independent Audit of the Assumptions and Constraints which informed the scheme in order to enable a final decision to be taken on a preferred route. Subsequently the Audit concluded that "no reason why the Executive Board of the GCP should not proceed to the next stage in the development of the C2C scheme". As such the Preferred Route was approved on July 1st 2021 and the scheme is proceeding to the Environmental Impact

Assessment stage, but as a result of CPCA interventions, delivery is now likely to be completed in 2026.

  - Park & Ride projects were paused as above including the proposed new P&R site(s) related to the A428 Cambourne – Cambridge Better Public Transport.

- Reducing emissions from buses (a priority measure) has not progressed as part of a Quality Bus Partnership. However, the GCP has been working with Stagecoach (the main operator locally) to assist with a trial of low emission buses operating on routes in the city centre – two fully electric buses joined the fleet in 2019 and became operational in February 202, covering the Citi 6 route. The cost of the new buses has been shared between the GCP and the operator. Meanwhile, the CPCA and the GCP submitted a bid to DfT for 30 electric buses to replace the Park & Ride fleet and a high frequency Citi service. If successful, this would result in a measurable reduction in air pollution in Cambridge.
- Installation of EV Charge Points for taxis planned for 2020 were not completed as forecasted due to Covid restricting on site works and resources within both the Local Authority and its contractors. By the end of 2020/21, 9 charge points have been installed across 5 sites, with a further 3 charge points close to being completed in the next few weeks. This will bring the total up to 12 active charge points across 6 sites. The remaining sites are scheduled to be completed by the end of 2021. This will complete our project total of 21 charge points across 13 sites.
- Data showing taxi charge use clearly shows in the next graph that the number of charging sessions dropped off over key Covid lockdown periods. The peak number of charging sessions remains in the third quarter of 2019/20, just before taxi usage was affected by Covid. We would expect to see the general trend of number of sessions raising over the next quarters.

Figure 4 Number of EV Taxi Charging Sessions per quarter



- Installation of EV Charge Points for residents and non-residents, on street. Progress has been slower than expected because of the logistic issues of installation of on-street EV charge points in areas of limited parking availability (which is where demand is highest) as well as the complexity of PFI contract with the lamp-post owners. A trial of rapid and fast charge points is in preparation for later in 2021. Other options are being actively considered to provide charging infrastructure to meet the growing demand – details will be provided in the next Annual Status Report.
- Installation of EV Charge Points for residents and non-residents, in car parks. A procurement has been funded to provide an Electric Vehicle Charge Point Strategy in the City car parks for residents and non-residents. Tenders are being assessed.
- Options for reducing emissions from HGV are limited by funding resources and logistical challenges. The GCP is undertaking a feasibility study considering freight deliveries in the city centre and potential use of one or more consolidation centres.
- Assessment of the Clean Air Zone options and/or any other interventions brought forward for implementation have been delayed by discussion on the shape of future transport options in Cambridge, as well as secondment of staff to Active Travel Projects. The GCP Board is considering a paper on 30 September that proposes a forward programme to design and deliver a transformed bus network alongside raising revenue to support services and measures to create space for buses and active travel.

A congestion or pollution based road charge is one of the options being considered and, taken together with the proposed public transport improvements, has the potential to considerably reduce traffic volumes and air pollution. If approved, a consultation will follow in autumn 2021.

- Work on the CPCA Bus Reform Project was paused while the CPCA worked to ensure that bus companies were able to provide public transport services during the pandemic. Bus passenger numbers were 66% lower in 2020 than in 2019, and have still not recovered to pre-pandemic levels.
- Consultation on extension of the Smoke Control Areas to cover the whole district was delayed because the final version of the Environment Bill has not yet passed into legislation.
- Reporting on the air quality impacts Mill Road project (bridge closure in 2019) has been delayed whilst Cambridge City Council concentrated on its statutory duties. We plan to report on this project in the autumn 2021.

New measures and projects introduced in 2020/21

Waterbeach to Cambridge and Cambridge Eastern Access

The Waterbeach to Cambridge project and Cambridge Eastern Access project are two of four corridor projects from the GCP that aim to provide better public transport and active travel routes, such as walking and cycling, offering better connections and alternatives to car use for growing communities to the north, south east, east and west of the city. These two projects have been in the pipeline for some time and are now being developed. New routes will be served by modern, electric vehicles to limit air pollution and noise and complemented by travel hubs to encourage park and ride journeys and offer end-to-end space for active travel options like walking and cycling.

The projects will feature

- Segregated high quality public transport options;
- On road public transport priority options including bus lanes;
- Connections for sustainable modes across and between existing commercial properties and developments as well as to, from and between new developments;
- Additional or relocated Park & Ride / interchange capacity;

- Cycle and pedestrian links including both strategic and local options (and consideration of other non-motorised users);
- Measures to physically integrate into other proposals such as the Milton Road project, the Chisholm Trail and the Waterbeach Greenways
- Co-ordination with GCP's City Access Project – which builds on the recommendations of the Greater Cambridge Citizen's Assembly to develop measures to step-up sustainable transport connections through Cambridge's historic heart.

No Car Zones

In January 2020 Cambridgeshire County Council resolved to conduct a feasibility study on the implementation of 'No car zones' outside schools. The aim of such schemes is to improve the safety, predominantly for children, in the vicinity of schools. There are other benefits associated that include the promotion of more sustainable methods of travel and improvements to air quality within the area.

In the current trial scheme, only pedestrians and cyclists will be able to enter the roads around two schools - St Bede's School on Birdwood Road, Coleridge, and St Matthew's School on Norfolk Street, Petersfield from 8am to 9am and from 3pm to 4pm during term time, except for access to premises on the roads or land adjacent to the road, where there is no other route. There will be no physical barriers, only signs.

The impact of these two 'no car zones' on residents, children, and businesses is being investigated by the University of Cambridge with the council. The researchers from the university's Medical Research Council (MRC) Epidemiology Unit will gather responses from people affected by the closure of two roads in Cambridge to cars by schools by Cambridgeshire County Council, which is collecting traffic and air pollution data (supplied by Cambridge City Council).

This trial is being installed using an experimental traffic regulation order (ETRO) which can operate for a period of up to 18 months and, as with all ETROs, the consultation period is during the first six months that the trial is in effect.

There are two parts to the feasibility study. Firstly, to determine the amount of highway engineering required to legally implement a successful scheme. Secondly, to determine the effects on air quality and health of the participants during the period

taken to undertake the scheme. Once sufficient information has been collected, a report will be delivered to the appropriate county council committee to determine the requirements for further, expanded study, closure of the existing study, or to initiate a programme of implementation.

Local Transport Plan refresh

Since the publication of the LTP in early 2020 there have been several significant changes to Cambridgeshire, Peterborough and the wider world that have impacted on the appropriateness of the region's transport network and overarching strategy. These challenges and opportunities include:

- New CO_2 and EV targets published by government in the Decarbonisation of Transport Plan and the Ten Point Plan for a Green Industrial Revolution
- New national walking and cycling policy, Gear Change
- Climate Change Commission recommendations
- Developments within the OxCam Arc, including England's Economic Heartland Transport Strategy and the changes to the spatial strategy framework
- The effects of COVID-19, which are being felt across the transportation sector with impacts on public transport and active travel. In addition, it is important to ensure that there is not a predominantly car-based recovery during the establishment of the "new normal".
- Strategic schemes, including A428, East-West Rail, Peterborough Station quarter and the Greater Cambridge Local Plan have developed rapidly.

These developments, together with the changes in government policy, both local and national, has led to the need for a refreshed LTCP.

The new LTP will consider the recommendations of Cambridgeshire and Peterborough Independent Commission on Climate Change. The evidence base will be updated, and scenarios explored to ensure that due consideration is given to the various ways in which society continues to emerge following the COVID-19 pandemic. The plan will provide non-transportation solutions as well, and so it is suggested that the Local Transport and Connectivity Plan to reflect this. For example, improved digital connectivity can reduce the need to travel. The LTCP will be consulted on in autumn 2021 and again in early 2022, to enable the Combined Authority to fully reflect the implications of any decision to remove the CAM from the overarching transport strategy. This revised timeline enables policies to

be worked up to align with partners and the Medium-Term Financial Plan. The LTCP will be delivered in 2022 to the Transport & Infrastructure Committee and the Authority Board.

CPCA and the GCP have submitted a bid to DfT for 30 electric buses to replace the Park & Ride fleet and a high frequency Citi service. In May 2021 the Combined Authority submitted an Expression of Interest to the Department for Transport as part of the Fast Track application process for thirty new battery electric zero emission double-decker buses to replace thirty diesel buses on existing routes through Cambridge for all P&R routes and the Citi 2 route, as well as the installation of charging infrastructure at a depot and opportunity charging at Babraham P&R site, directly connected to a new Solar Farm. A business case was developed with the Greater Cambridge Partnership and submitted in August 2021. The authorities will be working with an operator to support the procurement of the 30 new buses to enter service in the second half of 2022.

The project will deliver significant value for money with the ZEBRA funding requested representing just 26% of the overall project costs, have an immediate and significant benefit on air quality in Cambridge, as well as reducing carbon emissions. The Combined Authority contribution of £2.994m includes already approved revenue budget of £1.031m, the remainder of £1.963m requested is proposed to be drawn down from the Transforming Cities Fund. If successful, this would result in a measurable reduction in air pollution in Cambridge. We hope to include this as a new measure in the next Annual Status Report.

Cambridge City Council anticipates that the measures stated above and in Table 2.2 will maintain compliance in the Cambridge Air Quality Management Area.

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
1a	Expansion of Park & Ride services	Alternatives to private vehicle use	Bus based	5 P&R sites already in place (Camb. County Council)	This is an ongoing project.	Camb. County Council/ Greater Cambridge Partnership /CPCA	The Greater Cambridge Partnership	NO	Funded	£10m+	Planning	This measure is to provide an alternative to support future travel requirements	No additional pollution from additional bus services.	The GCP has increased provision at Trumpington Park & Ride by 274 car spaces and 5 additional bus bays.	The Greater Cambridge Partnership's programme includes plans for c.6500 new spaces at three new P&R sites to the west, south-west (at planning application) and south-east of the city. Proposals for the north and east are in development.
1b	Expansion of Park & Ride services	Alternatives to private vehicle use	Rail based Park & Ride	TBC	TBC	The Greater Cambridge Partnership	The Greater Cambridge Partnership	NO	Not funded	TBC	Planning	This measure is to provide an alternative to support future travel requirements	Completion and opening	Outline Business Case	A travel hub with c.750 spaces is planned at Foxton railway station. More information: https://www.greatercambridge.org.uk/transport/transport-projects/
2	Quality Bus Partner-ships	Alternatives to private vehicle use	Other	TBC	TBC	Cambridgeshire and Peterborough Combined Authority	Cambridgeshire and Peterborough Combined Authority and operators	NO	Not funded			This measure is to provide alternative to support future travel requirements and to ensure that the new services do not add air pollution	QBP agreement for current services and all new services	Operators waiting for outcome of CPCA bus services review and central government bus strategy.	Bus Reform Task Force is examining the appropriate framework for buses in the region. Provision of good public transport is key to meeting travel demand; buses must be high quality.
3	Camshare is one strand of the Travel for Cambridg e-shire scheme	Alternatives to private vehicle use	Car and lift sharing schemes	Ongoing	Ongoing	TfC, Camb. County Council		NO			Implementation	This measure is to provide alternative to support future travel requirements	n/a	5,000 members	Ongoing Routine. http://www.travelcambs.org.uk/car-share/
4	Provision of car park places for car club vehicles	Alternatives to private vehicle use	Car Clubs	Ongoing	Ongoing	Parking Services, Camb City Council	Car club providers	NO	Funded		Completed	This measure is to provide alternative to support future travel requirements	n/a	12 cars and 1 van in Zipcar. Cambridge City Council and Cambridgeshire County Council procured a car club operator to operate a car club, which has 38 vehicles.	Only 3 cars were removed during lockdown, but will be re-instated imminently; further expansion will be underway in 2021 as usage figures are starting to uplift now.

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
															There is no cost to the councils.
5	Provision of on-street car parking places for car club vehicles	Alternatives to private vehicle use	Car Clubs	Ongoing	Ongoing	Cambridgeshire County Council	Car club providers	NO	Funded		Completed	This measure is to provide alternative to support future travel requirements	n/a	12 cars and 1 van in Zipcar. Cambridge City Council and Cambridgeshire County Council procured a car club operator to operate a car club, which has 38 vehicles.	Only 3 cars were removed during lockdown, but will be re-instated imminently; further expansion will be underway in 2021 as usage figures are starting to uplift now. There is no cost to the councils.
6	Require a site-wide car club strategy for large-scale Major sites – detailing the location and phasing of the charge point installations	Alternatives to private vehicle use	Car Clubs	SPD adopted in January 2020	Ongoing	Environ-mental Health/ Planning/ Camb. City Council/ district councils	Developers via S106 or other agreeement	NO			Completed	This measure is to provide alternative to support future travel requirements	n/a	Not recorded.	Planning requirement in AQAP v2 and included in SPD.
7	Require 1 car club vehicle per 500 parking spaces, in new residential develop-ment, 1 vehicle per 10,000 m2 in non-	Alternatives to private vehicle use	Car Clubs	SPD adopted in January 2020	Ongoing	Environ-mental Health/ Planning/ Camb. City Council/ district councils	Developers via S106 or other agreeement	NO			Completed	This measure is to provide alternative to support future travel requirements	n/a	Not recorded.	Planning requirement in AQAP v2 and included in SPD.

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	residential develop-ments														
8	Promotion of electric bike hire/hub schemes	Alternatives to private vehicle use	Other	TBC	TBC	Environ-mental Health/ Planning/ Camb. City Council/ district councils	Depends on project	NO				This measure is to provide alternative to support future travel requirements	n/a	Camb City and Cambs County successfully bid for 30 e-cargo bikes, for councils, business and resident use, which are now in use.	Forward-thinking developers are already proposing e-bike hubs on large developments as sustainable transport mode offer to mitigate air pollution impact. Business parks are also looking at how they could offer electric bike hire, including at Cambridge Science Park and the Biomedical Campus.
9	Develop policies to require electric bike charge hubs and parking in new residential areas without off street parking	Alternatives to private vehicle use	Other	TBC	TBC	Environ-mental Health and Planning, Camb. City Council/ district councils	Depends on project	NO				This measure is to provide alternative to support future travel requirements	n/a	n/a	Will need to complement existing cycle parking requirements and space implications. Will need to consider if access is open or restricted.
10	Develop policies to promote electric bike charge facilities in workplaces and car parks/ require in new workplaces	Alternatives to private vehicle use	Other	TBC	TBC	Environ-mental Health and Planning, Camb. City Council/ district councils	Depends on project	NO				This measure is to provide alternative to support future travel requirements	n/a	n/a	Will need to complement existing cycle parking requirements and space implications. Will need to consider if access is open or restricted.

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	Provision of electric scooters (trial)	Alternatives to private vehicle use	Other	2020	2021	CPCA	Operator	NO	Funded		implementation	This measure is to provide alternative to support future travel requirements	n/a	400 e-scooters and 100 e-bikes in DfT trial, patronage increasing now that lockdown has eased.	12 month trial in and around Cambridge . Voi funds the trial, no cost to the council. Voi report that 27% of our riders in Cambridge reported that they are using e-scooters for journeys which were previously taken by car, ride-share or taxi. Please note this data has not been externally verified, and is based on responses to in-app surveys with our users, between 02/03/21 and 08/06/21.
17	Last Mile delivery based from P&R sites	Freight and Delivery Manage-ment	Delivery and service plans	TBC	TBC	GCP/ Camb. County Council/ CPCA	TBC	NO	Not funded		planning	This measure is to reduce the number of domestic and business deliveries, thus reducing traffic.	n/a	The GCP is exploring a freight consolidation pilot for the city centre.	The trial has the potential to link with P&R sites for outward goods
18	Click and Collect hubs at P&R sites	Freight and Delivery Manage-ment	Freight Consolidation Centre	TBC	TBC	GCP/ Camb. County Council/ CPCA	TBC	NO	Funding secured for pilot		planning	This measure is to reduce the number of domestic and business deliveries, thus reducing traffic.	n/a	The GCP is exploring a freight consolidation pilot for the city centre.	The trial has the potential to link with P&R sites for outward goods
19	Unified Consolida-tion Centres	Freight and Delivery Manage-ment	Freight partnerships for city centre deliveries	TBC	TBC	GCP/ Camb. County Council/ CPCA	TBC	no	Funding secured for pilot	£10k - £50k	Planning	n/a – this is about reducing traffic and keeping levels below NAQO in future	n/a	The GCP is exploring a freight consolidation pilot for the city centre.	The CPCA LTP policy to promote sustainable urban freight distribution is under developmentThis would have a regional emphasis, but would benefit all areas.

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20	City Centre restrictions	Freight and Delivery Manage-ment	Quiet and Out of Hours delivery	Core Area changes completed over 10 years ago	Ongoing	GCP/ Camb. County Council	TBC	NO			Completed	n/a – this is about keeping levels below NAQO in future	n/a	Complete	HGV not permitted in Cambridge Core Area 10am – 4pm.
22a	Cycle Delivery services	Freight and Delivery Manage-ment	Other		Ongoing	Camb. County Council	These services are commercially viable.	NO			implementation	n/a – this is about reducing traffic and keeping levels below NAQO in future	n/a	GCP consider-ing further incentives for cycle deliveries	Zedify (Cambridge) use specialist cargo-bikes and Electric vehicles. Cycle deliveries are used for home-delivery of take-away food.
22b	Provision of e-cargo bikes to local businesses for deliveries	Freight and Delivery Manage-ment	Other	2020	Ongoing	Cambridgeshire County Council and Cambridge City Council	eCargo Bike Grant Fund, GCP, City Changer Cargo Bike (Horizon 2020 project)	NO	funded	£100k - £250k	implementation	n/a – this is about reducing traffic and keeping levels below NAQO in future	n/a	in progress	
23	Air Quality Policy in Joint Local Plan	Policy Guidance and Develop-ment Control	Regional planning – Area-wide strategies	TBC	2024	Environmental Health/ Planning/ Joint team City/SCDC	n/a	NO			planning	n/a – this is about keeping levels below NAQO in future	Air Quality policies in joint Local Plan	Plan in preparation, policies to be prepared in 2022	Issues and Options report has been consulted on. The preferred options plan is now in preparation which shows a joint approach to air quality in the emerging policy https://consultations.greatercambridgeplanning.org/sites/gcp/files/2021-08/GCLP%20Wellbeing%20and%20Social%20Inclusion%20Topic%20Paper.pdf
24	Air Quality Policy in Local Plan	Policy Guidance and Develop-ment Control	Other Policy	2018	Ongoing	Environmental Health/ Planning/ Joint team City/SCDC	n/a	NO			Completed	n/a – this is about keeping levels below NAQO in future	n/a	In use	Completed

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25	Adopt/ revise a Low Emissions Strategy	Policy Guidance and Develop-ment Control	Low Emissions Strategy		TBC	Environmental Health/ Planning/ Joint team City/SCDC	n/a	NO				n/a – this is about keeping levels below NAQO in future	Completion of new LES	SCDC have a Low Emissions Strategy in place. City Council could adopt similar LES or work with SCDC on joint guidance.	To be considered with joint Local Plan discussions
26	Supple-mentary Planning Documents	Policy Guidance and Develop-ment Control	Air quality Planning and Policy Guidance	2020	2020	Environmental Health/ Planning/ Joint team City/SCDC	n/a	NO				n/a – this is about keeping levels below NAQO in future	Completion of Sustainable Construction and Development SPD	City and SCDC committees approved in 2020	Update of the 2007 Sustainable Design and Construction SPD to provide guidance for policies contained in the Local Plan. More detail included than previously as the SPD incorporates the Air Quality Guidance specific requirements.
27	Air Quality and Planning guidance document	Policy Guidance and Develop-ment Control	Air quality Planning and Policy Guidance	-	2019	Environmental Health/ Planning/ Joint team City/SCDC	-	NO			aborted	n/a	Update of Air Quality in Cambridge: Developers Guide	Not yet started	Not taken forwards. Detail included in SPD as a neater solution, see measure 26.
28	Develop guidance based on Defra cost-benefit approach to mitigation	Policy Guidance and Develop-ment Control	Air quality Planning and Policy Guidance	-	TBC	Environmental Health/ Planning/ Joint team City/SCDC	n/a	NO			Implementation	n/a – this is about keeping levels below NAQO in future	Production of new guidance to support Policy 36	included in SPD and used in 2021	useful for larger sites
29	Sustainable Procurement Guidance.	Policy Guidance and Develop-ment Control	Sustainable Procure-ment Guidance	2021	2021	District councils City/SCDC	n/a	NO			planning	n/a	n/a	Environmental factors are included in the council's Tender documents to ensure that all procurements consider economic, social and environmental issues	nearly completed
30	Develop policies to require Health Impact Assessments (HIA) at	Policy Guidance and Develop-ment Control	Other		TBC	Planning and Environ-mental Health. PH at County Council	n/a	NO				n/a – this is about keeping levels below NAQO in future	n/a	Early discussion phase	To ensure that Healthy Communities are part of the design, not an optional add-on

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	Pre-application stage														
31	Air Quality input into Joint Strategic Needs Assess-ments for Transport and for Built Environ-ment	Policy Guidance and Develop-ment Control	Other		Ongoing	Public Healthm County Council /Environmental Health Districts	n/a	NO			Completed	n/a – this is about keeping levels below NAQO in future	To ensure that Healthy Community strategies are embedded into the JSNA.	n/a	Complete
32	Public Health to be consulted on preparation of SPDs	Policy Guidance and Develop-ment Control	Other	ongoing	ongoing	Districts/ Camb. County Council	n/a	NO			Implementation	n/a – this is about keeping levels below NAQO in future	n/a	ongoing	
33a	Require a site wide EV charging strategy for all large-scale Major sites	Policy Guidance and Develop-ment Control	Other	2020	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
33b	Require a minimum of one slow EV Charge Point for each dwelling with allocated parking (100% coverage)	Policy Guidance and Develop-ment Control	Other	2020	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.

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34a	Require a minimum of one slow EV Charge Point for two dwelling with comm-unal parking (50% coverage)	Policy Guidance and Develop-ment Control	Other	2020	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
34b	Require a minimum of one slow EV Charge Point for every two parking spaces in non-resident-ial develop-ments (50% coverage)	Policy Guidance and Develop-ment Control	Other	2020	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
35a	Require one fast EV Charge Point for 1,000m2 non-residen-tial floor space	Policy Guidance and Develop-ment Control	Other	2020	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
35b	Require one rapid EV Charge Point for 1,000m2 non-residen-tial floor space	Policy Guidance and Develop-ment Control	Other	2020	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.

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35c	Require at least one rapid EV charge point for large-scale Major developments	Policy Guidance and Development Control	Other	2020	Ongoing	Cambridge City Environmental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
36a	Any new or replacement car park to have EV charging points	Policy Guidance and Development Control	Other	2020	Ongoing	Cambridge City Environmental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
36b	Require EV charge points to mitigate increase in trip generation where site use is intensified	Policy Guidance and Development Control	Other	2020	Ongoing	Cambridge City Environmental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
36c	Require installation of passive charge points at all parking spaces without active charge points	Policy Guidance and Development Control	Other	2020	Ongoing	Cambridge City Environmental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	Planning requirement in AQAP v2 and included in SPD.
37	CHP emission standards	Promoting Low Emission Plant	Emission control equipment for small and medium stationary combustion plant	Ongoing	Ongoing	Cambridge City Environmental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	All gas CHP to meet low emissions standards, Spark ignition engine: less than 150 mgNOx/Nm3; Compression ignition engine: less than 400 mgNOx/Nm3; Gas turbine: less than 50 mgNOx/Nm3

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38	Low NOx boilers	Promoting Low Emission Plant	Emission control equipment for small and medium stationary combustion plant	Ongoing	Ongoing	Cambridge City Environ-mental Health/ Planning	n/a	NO			Completed	Will reduce impact of additional development	n/a	In place	All developments to have low NOx boilers, defined as boilers that meet a dry NOx emission rating of 40mg/kWh.
42	Extension of Smoke Control Area	Promoting Low Emission Plant	Regulations for fuel quality for low emission fuels for stationary and mobile sources	TBC	2020 or 2021	Camb City Council	Defra AQG	NO	Funded		planning	n/a	n/a	Defra AQG funding won to undertake consultation into a City wide SCA.	Waiting for final version of Environment bill to be passed into legislation.
43	Restriction on fuel types used on dwellings moored on river	Promoting Low Emission Plant	Regulations for fuel quality for low emission fuels for stationary and mobile sources	Ongoing	Ongoing	Camb City Council	n/a	NO	n/a	n/a	in place	n/a	n/a	Regulations already in place to cover smoke nuisance. All licencees informed about new fuel buying regulations.	Boaters have limited heating options
44	Encourage use of zero-emission heating sources such as electric heating, ground source and air source heat pumps	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	2020	2025	Camb City Council	n/a	NO			Completed	n/a	n/a	An alternative to low NOx boilers suggested in the Sustainable Design and Construction SPD	

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46	**"Clean Air Zone"**	**Promoting low emission transport**	**Low Emission Zone**	**TBC**	**2021**	**Camb City Council/ Camb County Council/ Greater Cambridge Partnership**	**Greater Cambridge Partnership**	**NO**	**Not funded**	**£1m - £10m**	**Planning**	**TBC**	**CAZ in place**	**The GCP is considering options at September 2021 Executive Board meeting**	**GCP funding available if this measure goes forwards. This Measure is the one that has potential for the greatest improvement in air quality.**
47	LEV discount offered as part of policy for residents parking permits	Promoting low emission transport	LEV priority parking	2019	2019	Cambs County Council	Cambs County Council	NO		no cost	Completed	This measure is to support alternative fuels	Discount offered on residents parking permits to Low Emission Vehicles	completed	A vehicle with emissions of less than 75gkms CO2 will attract a 20% discount of the full cost of a resident permit.
48	Installation of Rapid and Fast EV charge points for taxis	Promoting low emission transport	Alternative refuelling infra-structure	2018	2021	Camb City Council/ South Cambs DC/ Camb County Council/ Greater Cambridge Partnership	Funding from OLEV, Greater Cambridge Partnership, Cambridge City Council	NO	Funded	£500k - £1m	Implementation	1.5 – 4.5% reduction in NOx emissions	Installation of 18 Rapid and 3 Fast EV chargepoints in Cambridge and South Cambridge-shire	9 Rapid chargers installed by March 2021	Delays in 20/21 because of Covid restricting on site works and resources within both the Local Authority and its contractors
49a	Installation of EV charge points for residents – on road	Promoting low emission transport	Alternative refuelling infra-structure	TBC	TBC	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	OLEV/GCP County/City	NO			Planning	This measure is to support alternative fuels	Installation of 16 EV chargepoints in residential parking zones. For property with no off-street parking	Discussion Phase	This strand of the project is delayed because of a scarcity of suitable parking spaces in Cambridge to be given over for EVCP provision
49b	Installation of EV charge points for residents - slot drains for cables	Promoting low emission transport	Alternative refuelling infra-structure	TBC	TBC	Camb City Council	OLEV/GCP County/City	NO			planning	This measure is to support alternative fuels	TBC	Discussion phase to find a suitable methodology	The AQAP partners are looking at alternative solutions for property with no off-street parking – on road charging

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49c	Installation of EV charge points for residential areas with communal car parks	Promoting low emission transport	Alternative refuelling infra-structure	TBC	TBC	Camb City Council Environmental Health and Housing teams	OLEV/GCP County/City	NO			Planning	This measure is to support alternative fuels	TBC	Discussion phase	The AQAP partners are looking at alternative solutions for property with no off-street parking – on road charging
49d	Installation of EV charge points for residents –adjacent to taxi charge point bays	Promoting low emission transport	Alternative refuelling infra-structure	TBC	TBC	Camb City Council County Council	OLEV/GCP County/City	NO			planning	This measure is to support alternative fuels	TBC	Discussion phase	The AQAP partners are looking at alternative solutions for property with no off-street parking – on road charging
49e	Installation of EV charge points in car parks for overnight charging for residents	Promoting low emission transport	Alternative refuelling infra-structure	TBC	TBC	Camb City Council Environmental Health and Parking teams	OLEV/GCP County/City	NO			Planning	This measure is to support alternative fuels	Installation of EVCP in car parks for overnight charging	Discussion phase	Needs to align with Parking EV Strategy
49f	Installation of EV charge points on lampposts, for residents and non-residents	Promoting low emission transport	Alternative refuelling infra-structure	TBC	TBC	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	OLEV/GCP County/City	NO			planning	This measure is to support alternative fuels	Installation of a trial of 6 EV charging points from lamposts	A trial is planned for 2020.	The AQAP partners are looking at alternative solutions for property with no off-street parking – on road charging
50	Installation of EV charge points for non-residents in car parks	Promoting low emission transport	Alternative refuelling infrastructure	ongoing	Ongoing	Camb City Council/ Camb County Council/	OLEV/GCP County/City	NO			Planning	This measure is to support alternative fuels	TBC	Some EV already in car parks	Parking EV Strategy will establish route map for further provision in City Car parks, at no cost to the council

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51	Installation of roadside EV charge points for residents and non-residents	Promoting low emission transport	Alternative refuelling infrastructure	TBC	n/a	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	OLEV/GCP	NO			Planning	This measure is to support alternative fuels	TBC	Discussion phase	The AQAP partners are looking at alternative solutions for property with no off-street parking – on road charging
53	Procuring low emission vehicles for own fleet where possible	Promoting low emission transport	Public vehicle procure-ment	2017 10 EV vans on city council fleet 2019 Electric Refuse vehicle on test	2026	Camb. City Council and shared services	Camb. City Council and SCDC	NO			planning	n/a – this is about keeping levels below NAQO in future	Project completion	A review paper has been prepared for consid-eration by members during the summer 2020	Decarbonising Cambridge City Council Vehicle Fleet, internal review document
54	Fee reduction for low emission taxis	Promoting low emission transport	Taxi emission incentives	2018	In place	Camb. City Council	Camb. City Council	NO	funded	£10k - £50k	Completed	1.5 – 4.5% reduction in NOx emissions	Minimum of 9 HCV and 5 PHV per annum per annum from 2018/19	39 EV have Zero Emission exemption.	-
55	Licensing conditions to require low emission taxis	Promoting low emission transport	Taxi Licensing conditions	2018	In place	Camb. City Council	City Council/	NO			Completed	1.5 – 4.5% reduction in NOx emissions	Minimum of 9 HCV and 5 PHV per annum from 2018/19	39 EV and 65 petrol hybrid out of a fleet of 452	A big shift from 2017 fleet - 2 EV and 30 petrol hybrid taxis. Little change in 2020/21 because of trading conditions related to the pandemic
56a	Lowering emissions from public service vehicles (buses and coaches)	Promoting low emission transport	Other	Gradual improve-ment of bus fleet is ongoing and has been for more than 10 years	TBC, no mechanism in place to require improve-ments, CAZ may be the most effective tool	Camb City Council/ Camb. County Council/GCP/ CPCA	Operator	NO	not funded		aborted	Could be significant	100% buses E6 or better. No increase in emissions from additional services	36% bus journey kilometres E6 in Cam-bridge Core Area (2018). Data not collected after 2018.	The cost of new buses. Pandemic related trading conditions.

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56b	**Lowering emissions from public service vehicles (buses and coaches)**	**Promoting low emission transport**	**Other**		**The GCP Board has agreed to look at extending the trial to create all-electric fleets on one or more additional routes.**	**Camb City Council/ Camb. County Council/ Greater Cambridge Partnership /CPCA**	**CPCA/GCP/DfT/operator**	**NO**	**Partially funded**	**£10m+**	**Planning/implementation**	**Could be significant. No increase in emissions from additional services**	**100% buses E6 or better**	**GCP co-funded with Stage-coach two electric buses which have operated on the Citi 6 and P&R services since February 2020. CPCA and GCP working on ZEBRA bid for 30 additional buse to be delivered in 2022.**	**The cost of electric buses and charging infrastructure are the barriers. CPCA looking at design and location of depots to facilitate operators introducing alternatively fuelled vehicles. A successful ZEBRA bid would ensure that NAQO are realised in the long term (all other factors remaining unchanged)**
56c	Electric Vehicle Charging Strategy	Promoting low emission transport	Other	Sep-19	TBC	Cambridge City Council	TBC	NO			Completed	This measure is to support alternative fuels	TBC	Environ-mental Health Team completed position statement in 2019	All relevant authorities and departments are now aware of the role that they will play
56d	Electric Vehicle Charging Strategy	Promoting low emission transport	Other	-	TBC	Cambridgeshire & Peterborough Combined Authority	TBC	NO			planning	This measure is to support alternative fuels	TBC	CPCA developing EV/EC strategy	CPCA tendering for consultants to develop, consult on and take EV/EC strategy to adoption. This will benefit whole region including Cambridge.
57a	Home-working policies	Promoting Travel Alternatives	Encourage and facilitate home working	Ongoing	Ongoing	Camb City Council/Camb County Council/GCP /CPCA	n/a	NO			completed	This measure is to reduce the need to travel to work	n/a	Home-working policies are in place	home-working policies being revised
58a	Active Travel Infra-structure via GCP measures	Promoting Travel Alternatives	Intensive Active Travel campaign and infra-structure	Ongoing	n/a	Greater Cambridge Partnership Camb County Council	Greater Cambridge Partnership	NO			planning	n/a	n/a	No specific measure in place	Integral part of other measures – new routes, junction upgrades, cycle parking, promotion of cycling and walking, etc.
58b	Active Travel Infra-structure via GCP and County measures	Promoting Travel Alternatives	Intensive Active Travel infra-structure installation	2020	n/a	CPCA, Greater Cambridge Partnership Camb County Council	DfT	NO	Partially funded	£1m - £10m	implementation	n/a	n/a	No specific measure in place	Emergency Active Travel infrastructure in place fro Tranche 1 and planning for Trache 2 is almost complete. See Text.

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59	Travel for Cambridge-shire	Promoting Travel Alternatives	Personalised Travel Planning	Ongoing	Ongoing	Camb County Council	n/a	NO			implementation	n/a	n/a	Not recorded.	Can be required for major sites at point of residents moving in to ensure they are aware of all travel options
60	Refresh Cambridge City Council Travel Plan	Promoting Travel Alter-natives	Other	Ongoing	ongoing	Cambridge City Council	n/a	NO	funded	<£10k	implementation	n/a	Adoption of refreshed Travel Plan each year	n/a	Ongoing . Travel to work and travel for work
61	Workplace Travel Plan	Promoting Travel Alternatives	Promote use of rail	Ongoing	ongoing	TfC, Cambridgeshire County Council	n/a	NO			implementation	n/a	n/a	n/a	Ongoing Routine Discounts available for TfC partners
62	Cycle parking provision in Local Plan	Promoting Travel Alternatives	Promotion of Cycling	Ongoing	Ongoing	Environ-mental Services/ Planning	n/a	NO			Completed	n/a	n/a	n/a	Cycle parking provision in current Local Plan and will be carried forward to future Local Plans, standards to be reviewed
63	S106 agree-ments for cycling and walking infra structure	Promoting Travel Alternatives	Promotion of Cycling	Ongoing	Ongoing	Environ-mental Services/ Planning	n/a	NO			Completed	n/a	n/a	n/a	Part of development/ planning contributions
64	Cycle parking design guide	Promoting Travel Alternatives	Promotion of Cycling	2010	In place	Environ-mental Services/ Planning	n/a	NO			completed	n/a	n/a	In place	https://www.cambridge.gov.uk/media/6771/cycle-parking-guide-for-new-residential-developments.pdf
65	Schemes and grants	Promoting Travel Alternatives	Promotion of Cycling	ongoing	Ongoing	Camb City Council/ Camb. County Council/	Camb City Council/ Camb. County Council/	NO	funded	<£10k	Implementation	n/a	n/a	n/a	https://www.cambridge.gov.uk/cycling-and-walking-promotion-grants
66	Schemes and grants	Promoting Travel Alternatives	Promotion of walking	ongoing	Ongoing	Camb City Council/ Camb. County Council/	Camb City Council/ Camb. County Council/	NO	funded	<£10k	Implementation	n/a	n/a	n/a	https://www.cambridge.gov.uk/cycling-and-walking-promotion-grants

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67	Travel for Cambridge shire Travel Plan Services	Promoting Travel Alternatives	School Travel Plans	Ongoing	Ongoing	TfC, Cambridgeshire County Council	n/a	NO			Implementation	n/a	n/a	n/a.	Travel Plan Services offer help with writing, developing, maintaining and monitoring as well as support for Travel Plan implementation
68	Travel for Cambridge shire Travel Plan Services	Promoting Travel Alternatives	Workplace Travel Plans	Ongoing	Ongoing	TfC, Cambridgeshire County Council	n/a	NO			Implementation	n/a	n/a	n/a	Travel Plan Services offer help with writing, developing, maintaining and monitoring as well as support for Travel Plan implementation
69	Travel for Cambridge shire	Promoting Travel Alternatives	Other	Ongoing	Ongoing	TfC, Cambridgeshire County Council	n/a	NO			Implementation	n/a	n/a	TfC offers employers a range of services, tools and resources to support sustainable travel choices	The aim is to implement effective travel initiatives that promote cycling, walking, public transport and car sharing to work.
70	Cambridge Matters magazine	Public Information	Leaflets	Ongoing	Ongoing	Environmental health and Media Team, Camb City Council	Camb City Council	NO			Implementation	n/a	n/a	Air quality articles in most quarters	Delivered to every household in the district.
71	Twitter and Facebook	Public Information	Social media	Ongoing	Ongoing	Environmental health and Media Team, Camb City Council	Camb City Council	NO			Implementation	n/a	n/a	Ongoing	Ongoing Routine
72	Provide information on request	Public Information	Radio	Ongoing	Ongoing	Environmental health and Media Team, Camb City Council	Camb City Council	NO			Implementation	n/a	n/a	Ongoing	Ongoing Routine
73	Provide information on request	Public Information	TV	Ongoing	Ongoing	Environmental health and Media Team, Camb City Council	Camb City Council	NO			Implementation	n/a	n/a	Ongoing	Ongoing Routine

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74	Website	Public Information	Internet	Ongoing	Ongoing	Environ-mental health and Media Team, Camb City Council	Camb City Council	NO			Implementation	n/a	n/a	Ongoing	Ongoing Routine
75	Clean Air Day	Public Information	Other	Ongoing	Ongoing	Environ-mental health and Media Team, Camb City Council	Camb City Councilss	NO			Implementation	n/a	n/a	Ongoing	Annual campaign to provide information about air quality and actions
76	Campaigns to provide information about impacts air pollution on health	Public Information	Other	Ongoing	-	Environ-mental health and Media Team, Camb City Council, PH Camb County Council	n/a	NO			Implementation	n/a	n/a	as required	Prepare and disseminate information about health impacts
78	Campaign to provide information about impacts of wood burning, what type of wood to burn and how to burn it efficiently	Public Information	Other	Ongoing	ongoing	Environ-mental health and Media Team, Camb City Council	n/a	NO			Implementation	n/a	n/a	Defra leaflets are available from the website and publicised in Cambridge Matters	
79	Publicity campaign	Traffic Manage-ment	Anti-idling enforce-ment	Ongoing	Ongoing	Environ-mental health and Media Team, Camb City Council	n/a	NO			Implementation	n/a	n/a	As required	Anti-idling information in Cambridge Matters
80	Penalty notices for non-compli-ance	Traffic Manage-ment	Anti-idling enforce-ment		n/a	Camb City Council		NO				n/a	n/a	On hold	Would need additional resource and powers for enforcement, not currently a priority.

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81	Expansion of residents' parking schemes	Traffic Manage-ment	Emission based parking and permit charges	2018	On hold.	Highways Team, Camb County Council	Camb County Council	NO			planning	n/a	Number of parking spaces in schemes	26 potential new RPS were identified, seven have been installed, one is pending installation, six were deferred due to lack of resident support, nine more were proposed by councillors but not yet brought forwards. This workstream has been restarted and a report is due in Spring 2022.	Implementation of schemes not yet started was paused in March 2020 for 12 months to allow the provision of sustainable transport measures to catch-up with the parking restrictions. This decision was made by members of the County Council's Highways and Infrastructure Committee. The implementation of increased provision of alternative and more sustainable methods of travelling to Cambridge has been slower than originally anticipated. https://cambridgeshire.cmis.uk.com/ccc_live/Meetings/tabid/70/ctl/ViewMeetingPublic/mid/397/Meeting/1150/Committee/7/Default.aspx
83	Congestion charging or road user charging	Traffic Manage-ment	Road-User charging/congestion zones	TBC	TBC	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	Greater Cambridge Partnership	No	Not funded	N/A	Under consideration	n/a	n/a	GCP considering options at September 2021 Executive Board	Work to assess possible demand management underway. Will improve air quality, reduce carbon emissions and provide reliable public transport
84	Recon-figuration of road space in Cambridge	Traffic Manage-ment	Strategic highways improve-ments	TBC	TBC	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	TBC	No	Funding ear-marked in City Access 5 year budget	TBC	Planning	n/a at this stage	Agreement and implementation of schemes	Further trial road closures are planned for late 21/early22.	The City Council consulted on the vision, aims, objectives and strategy for a Spaces and Movement SPD in autumn 2019.

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85	Creation of better cycling and walking on key routes	Traffic Manage-ment	Re-prioritisation of road space	Ongoing projects	Ongoing projects	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	Greater Cambridge Partnership	NO			Planning	n/a	n/a	See below for details of specific schemes	https://www.sustrans.org.uk/bike-life/bike-life-greater-cambridge
86	Extension of Core Area schemes – limiting access to city centre	Traffic Manage-ment	Access management	Ongoing project	TBC	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	Greater Cambridge Partnership	no	Funding ear-marked in City Access 5 year budget	TBC	Planning	Could be substantial in Core Area	TBC	A more comprehensive package of road space reallocation may result from the review of the road network hierarchy in the city that is currently in hand.	A report will go to the GCP Board in September 2021.
88	Review of traffic signals in Cambridge	Traffic Manage-ment	UTC, congestion management, traffic reduction	Rolling programme of reviews in progress	3 corridor reviews completed with outcomes being implemented	Greater Cambridge Partnership	Greater Cambridge Partnership	NO		TBC	Planning	n/a	n/a	GCP and county are currently piloting smart signals technology at selected junctions in the south of the city	GCP study to review existing infrastructure and consider future technology which may improve traffic flow and reduce idling, and could include bus prioritisation.
89	Workplace Parking Levy for employers with more than 300 employees in an area to be specified	Traffic Manage-ment	Workplace Parking Levy	TBC	n/a	Camb County Council/ Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Not funded	TBC	Under consideration	n/a	TBC	n/a	Work to assess possible demand management underway and to be discussed by GCP Exectutive Board in September 2021.
91a	CAM, Cambridge Area Metro	Transport Planning and Infra-structure	Public transport improve-ments)	TBC	TBC	Cambridgeshire and Peterborough Combined Authority	TBC	NO	Not funded	TBC	Aborted	A measure to accommodate long-term travel demand. Would reduce the need to use private transport to access key work, leisure and retail areas.	Completion of project		Learning and expertise from the CAM work to date will inform a developing transition plan, and that this will come back to the Combined Authority Board.

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91b	Whittlesford Railway Station Travel Hub – bus, cycling, walking improvement, station upgrade	Transport Planning and Infra-structure	Public Transport Improve-ments	TBC	TBC	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Partially funded	£10m +	Planning	A measure to accommodate long-term travel demand and reduce congestion in Cambridge	Completion	Draft Delivery Plan being developed further through further stake-holder engage-ment	https://www.greatercambridge.org.uk/transport/transport-projects/rural-travel-hubs/whittlesford-transport-master-planning-exercise
91c	New on road bus routes for Cambourne to Cambridge corridor, to north and south Cambridge	Transport Planning and Infra-structure	Bus route improve-ments	TBC	Due Summer 2020	Cambridgeshire and Peterborough Combined Authority	Cambridgeshire and Peterborough Combined Authority	NO	Not funded	TBC	Planning	A measure to accommodate current travel demand until CAM in place	n/a	Currently on hold due to COVID-19. Will not progress if CAM project does not progress.	
91d	Cambridge South East Transport Project	Transport Planning and Infra-structure	Bus route improve-ments	TBC	2025	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£10m +	Planning	A measure to accommodate long-term travel demand	n/a	EIA Consultation completed. Recommended to Exec Board for approval to submit TWAO	www.greatercambridge.org.uk/transport/transport-projects/cambridgesoutheast
91e	Cambourne to Cambridge corridor off-road Busway	Transport Planning and Infra-structure	Bus route improve-ments	TBC	2024	Greater Cambridge Partnership, Stagecoach	Greater Cambridge Partnership	NO	Funded	£10m+	Planning	A measure to accommodate long-term travel demand	Completion	Route decided July 2021	https://www.greatercambridge.org.uk/transport/transport-projects/cambourne-to-cambridge
91f	Improve-ments to bus routes - Histon Road	Transport Planning and Infra-structure	Bus route improve-ments	Spring 2020	Oct-21	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£10m+	Implementation	A measure to accommodate long-term travel demand	Completion	Almost complete	https://www.greatercambridge.org.uk/transport/transport-projects/histon-road/
91g	Improve-ments to bus routes - Milton Road	Transport Planning and Infra-structure	Bus route improve-ments	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£10m+	Implementation	A measure to accommodate long-term travel demand	Completion	Being progressed, on hold until A14 upgrade and Histon Road improve-ments have been completed	https://www.greatercambridge.org.uk/transport/transport-projects/milton-road/

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91h	Improve-ments to bus routes - city Access	Transport Planning and Infra-structure	Bus route improve-ments	TBC	Ongoing project with multiple strands	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Partially funded	£10m +	Planning	A measure to accommodate long-term travel demand and reduce congestion in Cambridge	Completion of projects	GCP considering options at Board September 2021	https://www.greatercambridge.org.uk/city-access
91i	Cambridge Eastern Access	Transport Planning and Infra-structure	Bus route improve-ments	TBC	2026	Greater Cambridge Partnership	Greater Cambridge Partnership	No	Funded	£10m +	Planning	A measure to accommodate long-term travel demand	Completion	consultation Phase	£50m estimate https://www.greatercambridge.org.uk/public-transport-schemes/cambridge-eastern-access
91j	Waterbeach to Cambridge	Transport Planning and Infra-structure	Bus route improve-ments, cycle and walking facilities	TBC	2026	Greater Cambridge Partnership	Greater Cambridge Partnership	No	Funded	£10m +	Planning	A measure to accommodate long-term travel demand	Completion	consultation Phase	£50m estimate https://www.greatercambridge.org.uk/public-transport-schemes/waterbeach-to-cambridge
92a	New cycling routes - Chisholm Trail	Transport Planning and Infra-structure	Cycle network	Construc-tion started in March 2019.	2022 – 2025	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	funded	£10m+	Implementation	A measure to accommodate long-term travel demand	Opening	Under con-struction	https://www.greatercambridge.org.uk/transport/transport-projects/chisholm-trail
92b	Cambridge South East cycle route	Transport Planning and Infra-structure	Cycle network	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£1m - £10m	Planning	A measure to accommodate long-term travel demand	Opening	EIA Consultation completed. Recommended to Exec Board for approval to submit TWAO. Cost includes pedestrian route (93b)	https://www.greatercambridge.org.uk/transport/transport-projects/cambridgesoutheast.
92c	Cambourne to Cambridge cycle route	Transport Planning and Infra-structure	Cycle network	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	funded		planning	A measure to accommodate long-term travel demand	Opening	See Text. Cost included in overall project.	https://www.greatercambridge.org.uk/transport/transport-projects/cambourne-to-cambridge/.
92d	Improved cycle routes - Histon Road	Transport Planning and Infra-structure	Cycle network	Work started winter 2020	2021/2	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£10m +	Implementation	A measure to accommodate long-term travel demand	Completion	Ongoing	https://www.greatercambridge.org.uk/transport/transport-projects/histon-road/

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92e	Improved cycle routes - Milton Road	Transport Planning and Infra-structure	Cycle network	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£10m+	Planning	A measure to accommodate long-term travel demand	Completion	Post-poned until completion of other major works nearby completed	https://www.greatercambridge.org.uk/transport/transport-projects/milton-road/
92g	New and/or improved cycle routes - Rural Travel Hubs	Transport Planning and Infra-structure	Cycle network	TBC	TBC	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Not funded		Aborted	A measure to accommodate long-term travel demand and reduce congestion in Cambridge	Completion	Consulta-tion closed January 2019, further discussion on detail with local residents agreed	https://www.greatercambridge.org.uk/transport/transport-projects/rural-travel-hubs
92h	Improved cycle routes – Cross City Cycling	Transport Planning and Infra-structure	Cycle network	2019	Summer 2020	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Fully Funded	£1m-£10m	Completed	A measure to accommodate long-term travel demand and reduce congestion	Completion of the 5 schemes	completed	Cross City Cycling https://www.greatercambridge.org.uk/transport/transport-projects/cross-city-cycling/
92i	New cycle routes - Greenways	Transport Planning and Infra-structure	Cycle network	TBC	TBC, First route to be completed by 2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Fully Funded	£10m+	Planning/ Implementation	A measure to accommodate long-term travel demand	Completion of all 12 routes	Routes prioritised for implementation	https://www.greatercambridge.org.uk/transport/transport-projects/greenways/
92j	New and/or improved cycle routes - Madingley Road	Transport Planning and Infra-structure	Cycle network	TBC	TBC	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Partially Funded	£10m+	Planning	A measure to accommodate long-term travel demand and reduce congestion in Cambridge	Completion	Consult-ation on options in closed in February 2020	Madingley Road https://www.greatercambridge.org.uk/transport/transportprojects/madingley-road/
92k	New cycling routes - A10 Royston to Cambridge	Transport Planning and Infra-structure	Cycle network		2019	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	funded		Completed	A measure to accommodate long-term travel demand	Completion	Cycle link between Melbourn and Shepreth completed.	Further link is the Melbourn Greenway project.

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93l	Cambridge Eastern Access	Transport Planning and Infra-structure	Cycle network	TBC	2026	Greater Cambridge Partnership	Greater Cambridge Partnership	No	Funded	£10m+	Planning	A measure to accommodate long-term travel demand	Completion	consultation Phase	£50m estimate https://www.greatercambridge.org.uk/public-transport-schemes/cambridge-eastern-access
93 m	Waterbeach to Cambridge	Transport Planning and Infra-structure	Cycle network	TBC	2026	Greater Cambridge Partnership	Greater Cambridge Partnership	No	Funded	£10m+	Planning	A measure to accommodate long-term travel demand	Completion	consultation Phase	£50m estimate https://www.greatercambridge.org.uk/public-transport-schemes/waterbeach-to-cambridge
93a	New walking routes - Chisholm Trail	Transport Planning and Infra-structure	Walking network	Con-struction started in March 2019.	2022 – 2025	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded		Implementation	A measure to accommodate long-term travel demand	Opening	Under con-struction	https://www.greatercambridge.org.uk/transport/transport-projects/chisholm-trail costs already a
93b	Cambridge South East	Transport Planning and Infra-structure	Walking network	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded	£500k - £10m	Planning	A measure to accommodate long-term travel demand	n/a	EIA Consultation completed. Recommended to Exec Board for approval to submit TWAO	https://www.greatercambridge.org.uk/transport/transport-projects/cambridgesoutheast
93c	Cambourne to Cambridge	Transport Planning and Infra-structure	Walking network	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO				A measure to accommodate long-term travel demand	n/a	Ongoing	https://www.greatercambridge.org.uk/transport/transport-projects/cambourne-to-cambridge/
93d	Improved walking routes - Histon Road	Transport Planning and Infra-structure	Walking network	Work started winter 2020	2021/2	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded		Implementation	A measure to accommodate long-term travel demand	Completion	Ongoing	https://www.greatercambridge.org.uk/transport/transport-projects/histon-road/
93e	New and/or improved walking routes - Milton Road	Transport Planning and Infra-structure	Walking network	TBC	2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Funded		Planning	A measure to accommodate long-term travel demand	Completion	Pos-poned until other local works have been completed	https://www.greatercambridge.org.uk/transport/transport-projects/milton-road/

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93g	New and/or improved walking routes - Rural Travel Hubs	Transport Planning and Infra-structure	Walking network	TBC	TBC	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Not funded		aborted	A measure to accommodate long-term travel demand and reduce congestion in Cambridge	Completion	Consulta-tion closed January 2019, further discussion on detail with local residents agreed	https://www.greatercambridge.org.uk/transport/transport-projects/rural-travel-hubs
93i	New walking routes - Greenways	Transport Planning and Infra-structure	Walking network	TBC	TBC, First route to be completed by 2024	Greater Cambridge Partnership	Greater Cambridge Partnership	NO			Planning	A measure to accommodate long-term travel demand	Completion of all 12 routes	Routes prioritised for implementation	https://www.greatercambridge.org.uk/transport/transport-projects/greenways/
93j	New and/or improved walking routes - Madingley Road	Transport Planning and Infra-structure	Walking network	TBC	TBC	Greater Cambridge Partnership	Greater Cambridge Partnership	NO			Planning	A measure to accommodate long-term travel demand and reduce congestion in Cambridge	Completion	Consultation on options in closed in February 2020	Madingley Road https://www.greatercambridge.org.uk/transport/transportprojects/madingley-road/
93k	New and/or improved walking routes - A10 Royston to Cambridge	Transport Planning and Infra-structure	Walking network	2019	TBC	Greater Cambridge Partnership	Greater Cambridge Partnership	NO			completed	A measure to accommodate long-term travel demand	Completion	Cycle link between Melbourn and Shepreth completed.	Further link is the Melbourn Greenway project.
93l	Cambridge Eastern Access	Transport Planning and Infra-structure	Walking network	TBC	2026	Greater Cambridge Partnership	Greater Cambridge Partnership	No	Funded		Planning	A measure to accommodate long-term travel demand	Completion	consultation Phase	£50m estimate https://www.greatercambridge.org.uk/public-transport-schemes/cambridge-eastern-access
93 m	Waterbeach to Cambridge	Transport Planning and Infra-structure	Walking network	TBC	2026	Greater Cambridge Partnership	Greater Cambridge Partnership	No	Funded		Planning	A measure to accommodate long-term travel demand	Completion	consultation Phase	£50m estimate https://www.greatercambridge.org.uk/public-transport-schemes/waterbeach-to-cambridge

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
94a	Bike Hire schemes	Transport Planning and Infra-structure	Cycle hire scheme	2018	n/a	Cambridge City Council, hire operators	operators	NO	This is viable without interventi on from local authoritie s		Implementa tion	n/a	n/a	n/a	Mobike are trialling bike hire schemes in Cambridge, replacing Ofo.
94b	E-Scooter hire	Transport Planning and Infra-structure	Cycle hire scheme	2020	2021	CPCA	Voi/DfT	No	Funded		Implementa tion	n/a	continuation of scheme	Voi have said that : 27% of riders in Cambridge reported that they are using e-scooters for journeys which were previously taken by car, ride-share or taxi.	Voi/Dft 1 year trial with 400 e-scooters and 100 e-bikes for hire in and around Cambridge. In Cambridge, the oldest Voi user is 80, the youngest is aged 18. 80% of users are aged between 18 and 32. No cost to the Authority.
95	Improve-ments to P&R sites	Transport Planning and Infra-structure	Public transport improve-ments – inter-changes and stations	-	n/a	Camb County Council/ Greater Cambridge Partnership	Greater Cambridge Partnership	NO				n/a	TBC	n/a	
96	Piloting rural hubs	Transport Planning and Infra-structure	Public transport improve-ments – inter-changes and stations	first hubs due 2020	n/a	Greater Cambridge Partnership	Greater Cambridge Partnership	NO	Not funded		aborted	n/a	n/a	project cancelled following consultations	https://www.greatercambridge.org.uk/transport/transport-projects/rural-travel-hubs/
97	New station to serve the hospital and bio-medical campus	Transport Planning and Infra-structure	Public transport improve-ments – inter-changes and stations		TBC	Network Rail/CPCA/ Greater Cambridge Partnership /CBC2020 campus	TBC	NO	Not funded	TBC	Planning	n/a	Station fully operational	Planning and consultation Phase	Unlikely to be completed in the lifetime of this Plan but vital for the future to accommodate CBC expansion.

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
103	Improve air quality by increasing tree cover	Other	Other	2020	2023	Camb City Council	City Council	NO	Funded	£500k - £1m	Implementation	n/a	n/a	around 17 tonnes of nitrogen dioxide and 3 tonnes of pm2.5 removed by trees in Cambridge baseline	Jointly funded by EDRF and CCC. https://www.cambridge.gov.uk/cambridge-canopy-project https://www.cambridge.gov.uk/i-tree-eco-project
104	No Car Zones trial	Other	Other	2021	2021	Cambridgeshire County Council, Medical Research Council, Cambridge City Council	MRC	NO	Funded		Implementation	n/a	Report	in progress	Trial of No Car Zones around 2 schools at peak hours

Note that information is provided in Table 2.2 where it is available. For example, the costs of some aspects of the work programme are not separated out from routine workstreams.

$PM_{2.5}$ – 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.

Source apportionment using the Defra Background maps shows that most background $PM_{2.5}$ in Cambridge has a regional component (around 95%). The background estimates in Cambridge are around 10 micrograms per cubic metre (2019).

$PM_{2.5}$ is measured at two locations in Cambridge – Gonville Place (a busy junction) and Newmarket Road (an arterial route). Recent measurements of $PM_{2.5}$ at Newmarket Road indicate that there is a very small roads component in this location (measurements at the site are the same as the background – for example, 10 micrograms per cubic metre annual mean in 2019), but at Gonville Place there is an additional contribution of up to 4 micrograms per cubic metre $PM_{2.5}$ (14 micrograms per cubic metre annual mean in 2019). Most parts of Cambridge have 'background' levels of $PM_{2.5}$, but it is likely that hotspots are present in locations of high traffic density, such as Gonville Place. Levels of PM2.5 were lower in 2020 at both sites but the measurement at Gonville Place still exceeded the WHO limit of 10 micrograms per cubic metre annual mean.

The Public Health Outcomes Framework measurement D01 Fraction of Mortality attributable to Particulate Air Pollution data shows that 43 deaths in Cambridge could be attributed to air pollution in 2019 (latest data available).

Particulate Matter specific measures

Cambridge City Council has considered setting targets for $PM_{2.5}$ reduction, although the potential to achieve significant reduction is limited by the high regional contribution. There are few measures that can be undertaken locally that will specifically reduce the small amount of $PM_{2.5}$ produced locally. Regional, national and international measures will be more effective.

There are measures in the Action Plan that address the sources of nitrogen dioxide will also help to reduce particulate matter (PM_{10} and $PM_{2.5}$); which include:

- Ensuring that any increase in public transport provision is offset, at least, by improvements in tail-pipe emissions.
- Ensuring that the Public Health perspective is integrated into all transport/traffic policies and GCP plans and investment decisions.
- Ensuring that the Public Health perspective is integrated into planning policies; for example, by developing planning policies in the next iteration of the Local Plan that require a Health Impact Assessment for proposed developments over a certain size. This will ensure that new developments have health considerations at the heart of the scheme and lead to healthier communities.
- Publicity campaigns to provide information about impacts of wood burning/what type of wood to burn and how to burn it efficiently.
- Consideration of extension of the Smoke Control Area to cover the whole district.
- Publicity campaigns about traffic idling.

Cambridge already takes the following measures to address particulate matter levels:

- Demolition and construction dust is controlled by planning conditions requiring demolition and construction management plans.
- Where appropriate, the use of planning conditions to control non-road mobile machinery emissions.
- Smoke Control Areas cover the central part of Cambridge. We are considering extending the SCA to cover the whole district but are waiting to see what national measures will be included in the final version of the Environment Act, currently going through parliament, as it was this time last year. New regulations limiting the sale of house coal and wet wood should have a small impact on localised particulate matter levels. These will be publicised in the Cambridge Matters magazine that is delivered to every household in Cambridge.
- Boats moored on the river are not allowed to ‘emit smoke’ as part of their mooring agreement. Smokeless coal is encouraged in preference to wood. Boat dwellers will be informed by hand-delivered letter about the new purchasing regulations.

- Air Quality Grant funding will be used during 2021 to measure relative levels of particulates in a range of Cambridge non-roadside locations to understand the local variations in particulate levels at different times of the day and year. The results will inform any projects brought forwards resulting from any new measures in the Environment Act.

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

This section sets out the monitoring undertaken within 2020 by Cambridge City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

No changes were made to the monitoring network in 2020. Three automatic monitoring stations achieved data capture above 95%. Regent Street achieved 83% because of a recurring flow issue (nitrogen dioxide only) and Newmarket Road achieved 94% (nitrogen dioxide) and 90% ($PM_{2.5}$); 1 diffusion tube required annualisation.

The levels of NO_2 recorded both inside and outside the AQMA in 2020 were significantly lower compared with 2019 results. The continuous monitors recorded annual means significantly lower than in 2019, especially in the city centre at Gonville Place and Parker Street. This is replicated by the diffusion tube data annual means, which demonstrate the impact depending upon the environment in which they are located. The greatest improvements in air quality are where the largest number of vehicles were no longer travelling. This list is a comparison of 2020 and 2019 average data sets.

Figure 5 List of measured falls in nitrogen dioxide levels

Type of site	Fall in measured nitrogen dioxide
Background	-3.5
Urban Background	-4
Radial roads	-6
Inner Ring Roads	-7.5
Inner City Streets	-10
Around the Bus Station	-9
Around the Railway Station	-10

Both PM_{10} and $PM_{2.5}$ levels were slightly lower in 2020.

No changes to the Air Quality Management Area are proposed.

More detail is set out in Appendix A.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Cambridge City Council undertook automatic (continuous) monitoring at 5 sites during 2020. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The Cambridge City Council Air Pollution Measurements page presents automatic monitoring results for Cambridge City Council with automatic monitoring results also available through the UK-Air website .

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

Cambridge City Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 69 sites during 2020. 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 and in the Air Quality Monitoring Stations Map . 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.

Cambridge City Council monitors levels of benzene for the non-automatic monitoring network at the AURN site in Regent Street. National monitoring results are available at https://uk-air.defra.gov.uk/data. The annual average level of benzene measured in Cambridge was 0.45 micrograms per cubic metre in 2020.

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias and annualisation. 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 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).

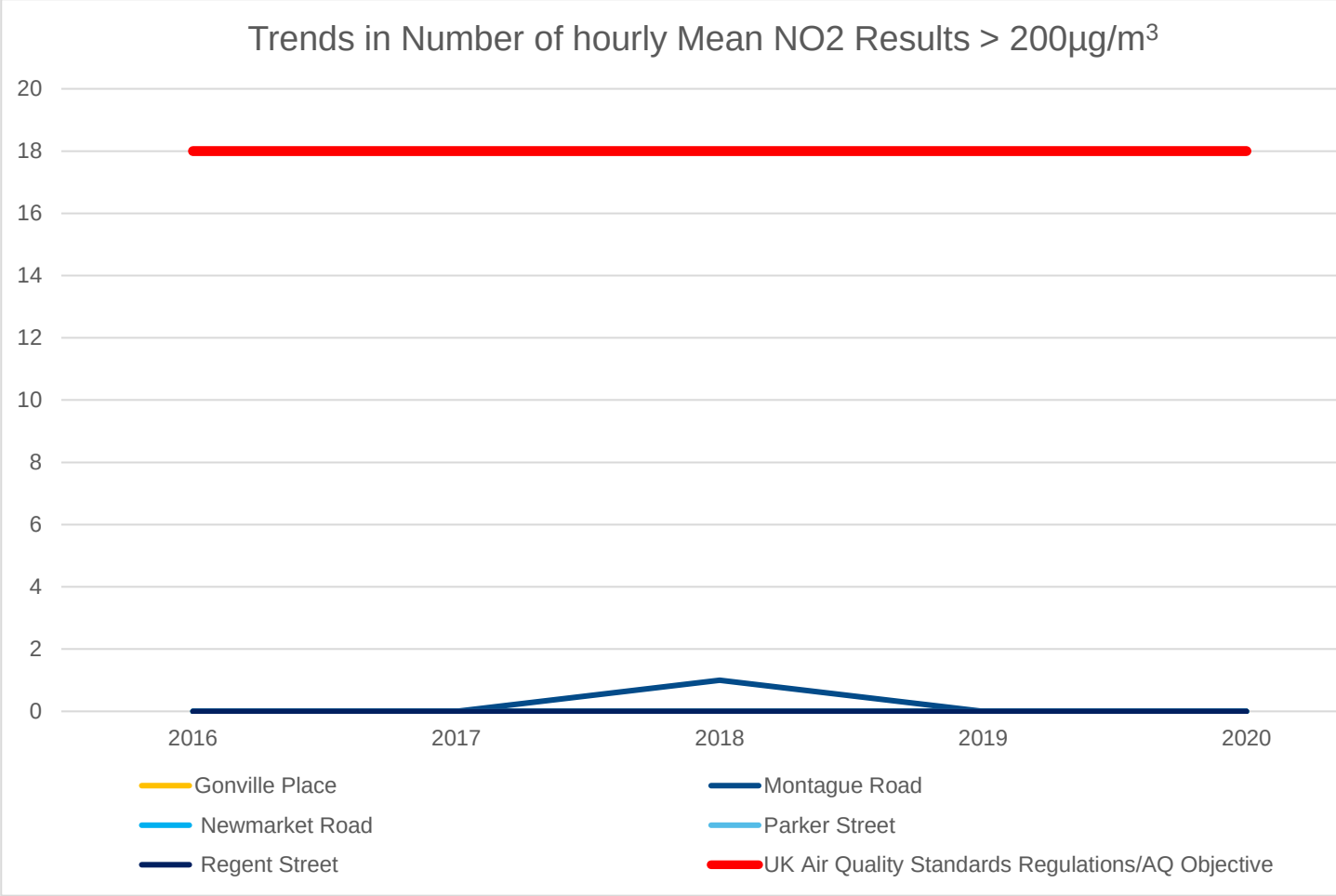
For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

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 the air quality objectives in 2020. Trends are discussed and illustrated with trend charts in the appendices. No changes to the AQMA are planned.

3.1.4 Particulate Matter (PM_{10})

Figure A.7 – Trends in Number of NO_2 1-Hour Means > 200µg/m^3



There has only been one exceedance of the nitrogen dioxide hourly mean in the past 5 years in Cambridge.

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. There were no exceedances of this air quality objective in 2020.

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 this air quality objective in 2020.

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. Trends are discussed and illustrated with trend charts in the appendices.

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)
CM1	Gonville Place	Roadside	545508	257828	NO_2, PM_{10}, $PM_{2.5}$	Yes, AQMA 1	Chemiluminescent, BAMs	1.8	3.2	2
CM2	Montague Road	Roadside	546057	259487	NO_2, PM_{10}	Yes, AQMA 1	Chemiluminescent, BAM	1.4	3.9	2
CM3	Newmarket Road	Roadside	546317	258900	NO_2, $PM_{2.5}$	Yes, AQMA 1	Chemiluminescent, TEOM	0.5	3.3	2
CM4	Parker Street	Roadside	545366	258391	NO_2, PM_{10}	Yes, AQMA 1	Chemiluminescent, BAM	0.5	3.3	2.5
CM5	Regent Street	Roadside	545289	258118	NO_2	Yes, AQMA 1	Chemiluminescent	0.5	2.3	5

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)
1	Emmanuel Street	Roadside	545220	258357	NO2	Cambridge AQMA	0.0	2.4	No	2.5
2	Histon Road 2	Roadside	544292	261202	NO2	NO	20.0	1.7	No	2.5
3	Magdalene Street	Roadside	544677	258992	NO2	Cambridge AQMA	0.0	2.0	No	2.5
4	Northampton Street	Roadside	544492	259008	NO2	Cambridge AQMA	0.0	2.0	No	2.5
5	Silver Street	Roadside	544770	258112	NO2	Cambridge AQMA	0.0	1.0	No	2.5
6	Long Road	Kerbside	544867	255709	NO2	NO	20.0	0.1	No	2.0
7	Newmarket Road	Roadside	546181	258886	NO2	Cambridge AQMA	2.0	1.7	No	2.0
8	Milton Road	Roadside	545977	230352	NO2	NO	3.0	8.0	No	2.0
9	Drummer Street	Roadside	545235	258485	NO2	Cambridge AQMA	0.0	2.1	No	2.5
10	Gilbert Road	Roadside	545314	259777	NO2	NO	10.0	1.0	No	2.0
11	Latham Road	Background	544811	256744	NO2	NO	10.0	20.0	No	2.0
12	Newmarket Road	Roadside	547998	259349	NO2	Cambridge AQMA	30.0	3.7	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)
13	East Road	Roadside	545904	258431	NO2	Cambridge AQMA	1.0	4.0	No	2.5
14	Mill Road	Roadside	546080	257944	NO2	Cambridge AQMA	0.0	2.0	No	2.0
15	Eddington Avenue	Kerbside	542744	260046	NO2	NO	2.0	0.4	No	2.0
16	Regent Street (office)	Roadside	545279	258135	NO2	Cambridge AQMA	0.5	2.3	No	5.5
17	Coldhams Lane	Roadside	547216	258286	NO2	NO	10.0	3.5	No	2.0
18	Pembroke Street	Roadside	544884	258098	NO2	Cambridge AQMA	0.0	1.2	No	2.0
19	Huntingdon Road 2	Roadside	543100	260344	NO2	NO	25.0	2.5	No	2.0
20	Elizabeth Way	Roadside	546083	259150	NO2	Cambridge AQMA	N	1.6	No	2.5
21	Victoria Road	Roadside	544425	259560	NO2	Cambridge AQMA	0.0	1.8	No	2.0
22	Madingley Road	Kerbside	543784	259093	NO2	NO	20.0	0.8	No	2.0
23	Huntingdon Road	Roadside	543761	259813	NO2	NO	15.0	1.0	No	2.0
24	Histon Road	Kerbside	544308	259664	NO2	NO	2.0	0.5	No	2.0
25	Barton Road	Roadside	544100	257473	NO2	NO	20.0	2.2	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)
26	Fen Causeway	Roadside	544943	257567	NO2	Cambridge AQMA	50.0	2.1	No	2.0
27	Trumpington High St	Roadside	544575	255307	NO2	NO	5.0	2.7	No	2.0
28	Babraham Road	Roadside	546961	255132	NO2	NO	20.0	1.2	No	2.0
29	Cherry Hinton Road	Kerbside	548331	256252	NO2	NO	10.0	0.8	No	2.5
30	Arbury Road	Kerbside	545693	260473	NO2	NO	5.0	0.8	No	2.0
31	Newnham Road	Roadside	544529	257730	NO2	Cambridge AQMA	0.0	1.6	No	2.0
32	Hills Road 2	Roadside	545893	257234	NO2	NO	2.0	3.6	No	2.5
33	Victoria Avenue	Roadside	545333	259439	NO2	Cambridge AQMA	0.0	1.4	No	2.0
34	Parker Street	Roadside	545390	258390	NO2	Cambridge AQMA	0.0	1.4	No	2.5
35	Abbey Road	Roadside	546163	258983	NO2	Cambridge AQMA	1.0	1.7	No	2.0
36	Cockburn Street	Urban Background	546596	257594	NO2	Cambridge AQMA	0.0	1.5	No	2.0
37	Oaktree Avenue	Urban Background	545885	260088	NO2	Cambridge AQMA	10.0	1.0	No	2.0
38	Chesterton Road	Roadside	545566	259579	NO2	Cambridge AQMA	2.0	2.7	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)
39	Maids Causeway	Kerbside	545710	258782	NO2	Cambridge AQMA	5.0	0.8	No	2.0
40	Emmanuel Road	Roadside	545405	258521	NO2	Cambridge AQMA	0.0	1.5	No	2.0
41	Downing Street	Roadside	545162	258240	NO2	Cambridge AQMA	0.0	1.3	No	2.0
42	Trumpington Street	Roadside	544981	257890	NO2	Cambridge AQMA	2.0	1.4	No	2.0
43	Lensfield Road	Roadside	545271	257675	NO2	Cambridge AQMA	5.0	1.8	No	2.0
44	Park Terrace	Roadside	545430	258271	NO2	Cambridge AQMA	3.0	1.9	No	2.5
45	St Andrew's St	Urban Centre	545135	258391	NO2	Cambridge AQMA	1.0	0.8	No	2.5
46	Parkside	Kerbside	545549	258283	NO2	Cambridge AQMA	5.0	0.5	No	2.0
47, 48, 49	Gonville Place	Roadside	545508	257828	NO2	Cambridge AQMA	0.0	3.3	Yes	2.0
50	Hills Road 3	Roadside	545854	257229	NO2	NO	3.0	3.0	No	2.0
51	Shelford Road	Roadside	544960	254220	NO2	NO	5.0	2.0	No	2.0
52	Station Road 2	Kerbside	546019	257300	NO2	Cambridge AQMA	10.0	0.4	No	2.5
53	Station Road 1	Kerbside	545897	257325	NO2	Cambridge AQMA	10.0	0.4	No	2.5

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)
54	Tenison Road 1	Kerbside	546034	257683	NO2	Cambridge AQMA	4.0	0.2	No	2.5
55	Tenison Road 2	Kerbside	546005	257405	NO2	Cambridge AQMA	4.0	0.3	No	2.5
56	Silverwood Close	Roadside	546602	258796	NO2	Cambridge AQMA	8.0	1.7	No	2.0
57	Great Northern Road	Kerbside	546060	257389	NO2	NO	3.0	0.2	No	2.5
58	Station Place	Kerbside	546080	257092	NO2	MO	3.0	0.5	No	2.5
59	Coldhams Lane 3	Kerbside	548858	257162	NO2	NO	7.5	2.5	No	2.5
60	Barnwell Road	Kerbside	547917	258942	NO2	NO	7.5	0.2	No	2.5
61	Newmarket Road 3	Kerbside	546341	258882	NO2	Cambridge AQMA	10.0	2.0	No	2.5
62	Mill Road 2	Kerbside	547181	257566	NO2	NO	0.0	2.5	No	2.5
63	Station Square	Kerbside	546177	257309	NO2	Cambridge AQMA	3.0	1.0	No	2.5
64	Park Street	Kerbside	544952	258856	NO2	Cambridge AQMA	8.0	2.0	No	2.5
65	Brooklands Avenue	Roadside	545896	257025	NO2	NO	3.0	1.0	No	2.5
66	Shelford/Trumpington	Roadside	544580	254692	NO2	NO	15.0	1.0	No	2.5

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)
67	Shelford 2	Kerbside	544614	254646	NO2	NO	15.0	0.5	No	2.5
68	Addenbrookes Road	Roadside	545211	254217	NO2	NO	10.0	3.0	No	2.5
69	Fendon Road	Kerbside	546854	255405	NO2	NO	20.0	0.5	No	2.5
70	Hills Road 4	Roadside	546693	255379	NO2	NO	30.0	3.0	No	2.5
71	Trumpington Road 2	Kerbside	545245	256860	NO2	NO	20.0	0.5	No	2.5

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 2020 (%) (2)	2016	2017	2018	2019	2020
CM1 Gonville Place	545508	257828	Roadside	99.8	99.8	36	31	30	28	20
CM2 Montague Road	546057	259487	Roadside	99.8	99.8	27	24	25	22	16
CM3 Newmarket Road	546317	258900	Roadside	94.4	94.4	24	26	25	22	18
CM4 Parker Street	545366	258391	Roadside	97.7	97.7	**41**	37	32	33	24
CM5 Regent Street	545289	258118	Roadside	83	83	32	29	26	27	22

☒ **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 µg/m^3.

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

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 2020 (%) (2)	2016	2017	2018	2019	2020
1	545220	258357	Roadside	92.3	92.3	38	34	36	35	20.2
2	544292	261202	Roadside	82.7	82.7	27	23	24	21	13.8
3	544677	258992	Roadside	100.0	100.0	27	21	22	20	12.4
4	544492	259008	Roadside	100.0	100.0	37	33	31	31	20.1
5	544770	258112	Roadside	100.0	100.0	34	29	26	24	13.0
6	544867	255709	Kerbside	100.0	100.0	**45**	**40**	37	34	24.3
7	546181	258886	Roadside	73.1	73.1	35	32	33	31	26.0
8	545977	230352	Roadside	92.3	92.3	20	19	18	18	14.0
9	545235	258485	Roadside	100.0	100.0	31	25	28	23	16.7
10	545314	259777	Roadside	100.0	100.0	22	21	20	24	15.7
11	544811	256744	Background	100.0	100.0	13	10	10	11	7.4
12	547998	259349	Roadside	100.0	100.0	29	28	25	23	20.4
13	545904	258431	Roadside	84.6	84.6	26	24	24	22	15.7

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 2020 (%) [2]	2016	2017	2018	2019	2020
14	546080	257944	Roadside	90.4	90.4	25	24	23	21	15.8
15	542744	260046	Kerbside	100.0	100.0				18	12.7
16	545279	258135	Roadside	100.0	100.0	30	29	27	26	17.0
17	547216	258286	Roadside	100.0	100.0	24	22	21	22	15.1
18	544884	258098	Roadside	90.4	90.4	36	34	30	30	17.9
19	543100	260344	Roadside	75.0	75.0	23	21	20	18	11.7
20	546083	259150	Roadside	100.0	100.0	31	26	27	26	19.3
21	544425	259560	Roadside	100.0	100.0	28	25	24	22	15.8
22	543784	259093	Kerbside	100.0	100.0	37	33	30	30	18.1
23	543761	259813	Roadside	92.3	92.3	23	19	17	17	11.7
24	544308	259664	Kerbside	90.4	90.4	29	29	24	25	19.0
25	544100	257473	Roadside	100.0	100.0	22	19	19	18	11.2
26	544943	257567	Roadside	100.0	100.0	22	19	19	18	12.0
27	544575	255307	Roadside	100.0	100.0	24	19	20	18	13.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
28	546961	255132	Roadside	100.0	100.0		39	32	33	21.5
29	548331	256252	Kerbside	100.0	100.0	22	21	19	19	14.4
30	545693	260473	Kerbside	92.3	92.3	19	18	17	18	14.9
31	544529	257730	Roadside	100.0	100.0	33	31	31	29	20.3
32	545893	257234	Roadside	82.7	82.7	29	24	22	22	15.3
33	545333	259439	Roadside	82.7	82.7	37	35	35	31	21.4
34	545390	258390	Roadside	82.7	82.7	39	32	33	31	19.3
35	546163	258983	Roadside	100.0	100.0	21	19	17	17	13.5
36	546596	257594	Urban Background	100.0	100.0	20	17	16	15	11.1
37	545885	260088	Urban Background	100.0	100.0	18	16	15	15	11.0
38	545566	259579	Roadside	92.3	92.3	26	23	21	23	15.9
39	545710	258782	Kerbside	92.3	92.3	32	28	30	27	18.7
40	545405	258521	Roadside	84.6	84.6	39	33	34	31	23.0
41	545162	258240	Roadside	82.7	82.7	36	28	31	27	16.3

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
42	544981	257890	Roadside	100.0	100.0	27	24	20	20	13.1
43	545271	257675	Roadside	100.0	100.0	36	32	29	27	18.6
44	545430	258271	Roadside	100.0	100.0	31	23	20	21	13.9
45	545135	258391	Urban Centre	92.3	92.3	37	33	33	32	20.6
46	545549	258283	Kerbside	90.4	90.4	25	23	23	19	13.9
47, 48, 49	545508	257828	Roadside	84.6	84.6	35	31	31	29	20.1
50	545854	257229	Roadside	100.0	100.0	32	23	25	23	15.9
51	544960	254220	Roadside	92.3	92.3	27	24	22	25	14.9
52	546019	257300	Kerbside	100.0	100.0	34	22	22	24	15.8
53	545897	257325	Kerbside	84.6	84.6	34	30	23	27	19.2
54	546034	257683	Kerbside	90.4	90.4	23	21	23	20	15.1
55	546005	257405	Kerbside	100.0	100.0	25	25	22	22	14.4
56	546602	258796	Roadside	100.0	100.0	27	23	23	20	17.3
57	546060	257389	Kerbside	100.0	100.0	25	33	30	31	17.6

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
58	546080	257092	Kerbside	90.4	90.4	36	32	31	30	23.1
59	548858	257162	Kerbside	100.0	100.0			15	16	12.1
60	547917	258942	Kerbside	100.0	100.0			23	22	16.4
61	546341	258882	Kerbside	82.7	82.7			33	34	21.8
62	547181	257566	Kerbside	92.3	92.3				20	14.6
63	546177	257309	Kerbside	92.3	92.3			31	33	17.9
64	544952	258856	Kerbside	84.6	84.6			24	23	15.4
65	545896	257025	Roadside	90.4	90.4	27	22	24	22	16.1
66	544580	254692	Roadside	100.0	100.0	36	32	30	28	20.9
67	544614	254646	Kerbside	100.0	100.0	25	21	18	19	13.8
68	545211	254217	Roadside	100.0	100.0	22	18	17	16	12.5
69	546854	255405	Kerbside	100.0	100.0	27	24	22	21	15.4
70	546693	255379	Roadside	92.3	92.3	27	22	21	21	16.7
71	545245	256860	Kerbside	65.4	65.4	32	25	26	25	14.5

☒ **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

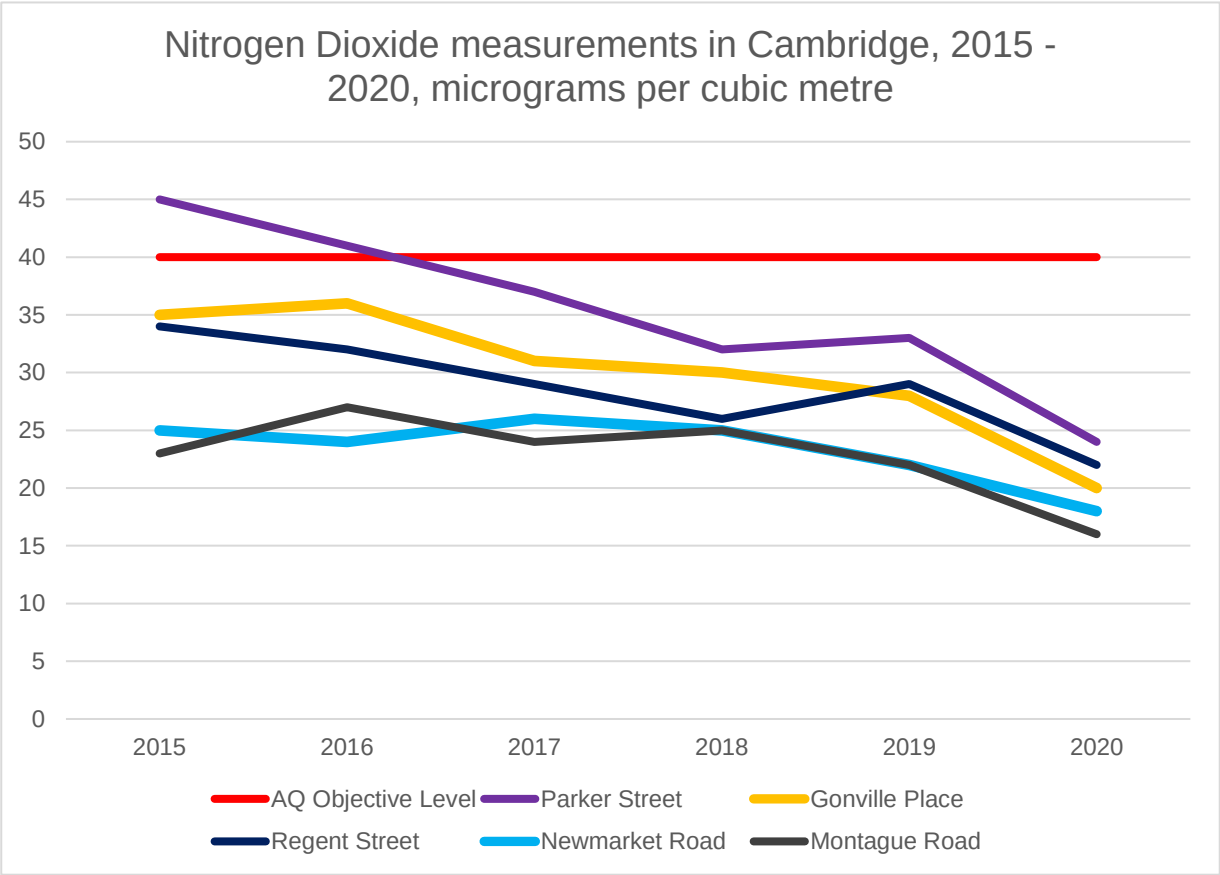
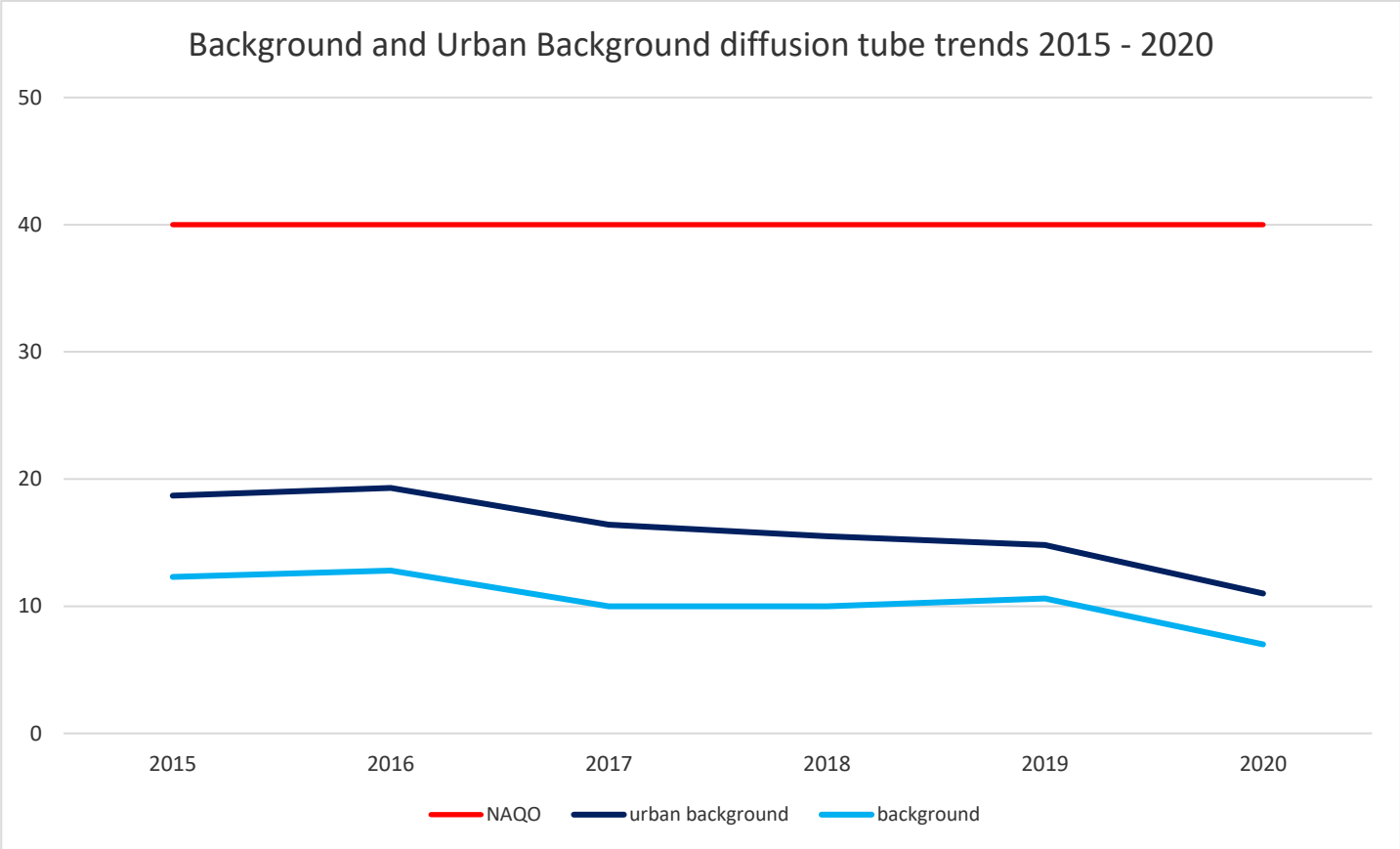


Figure A.1 presents NO_2 annual mean concentrations for the continuously monitoring sites between years 2015 to 2020. There are no exceedances of the annual mean objective in 2020 and there is a general trend of reduction experienced across the sites. There is a significant drop in measured nitrogen dioxide in 2020; this is discussed in the sections about the pandemic and the impact of lockdown (Appendix F).

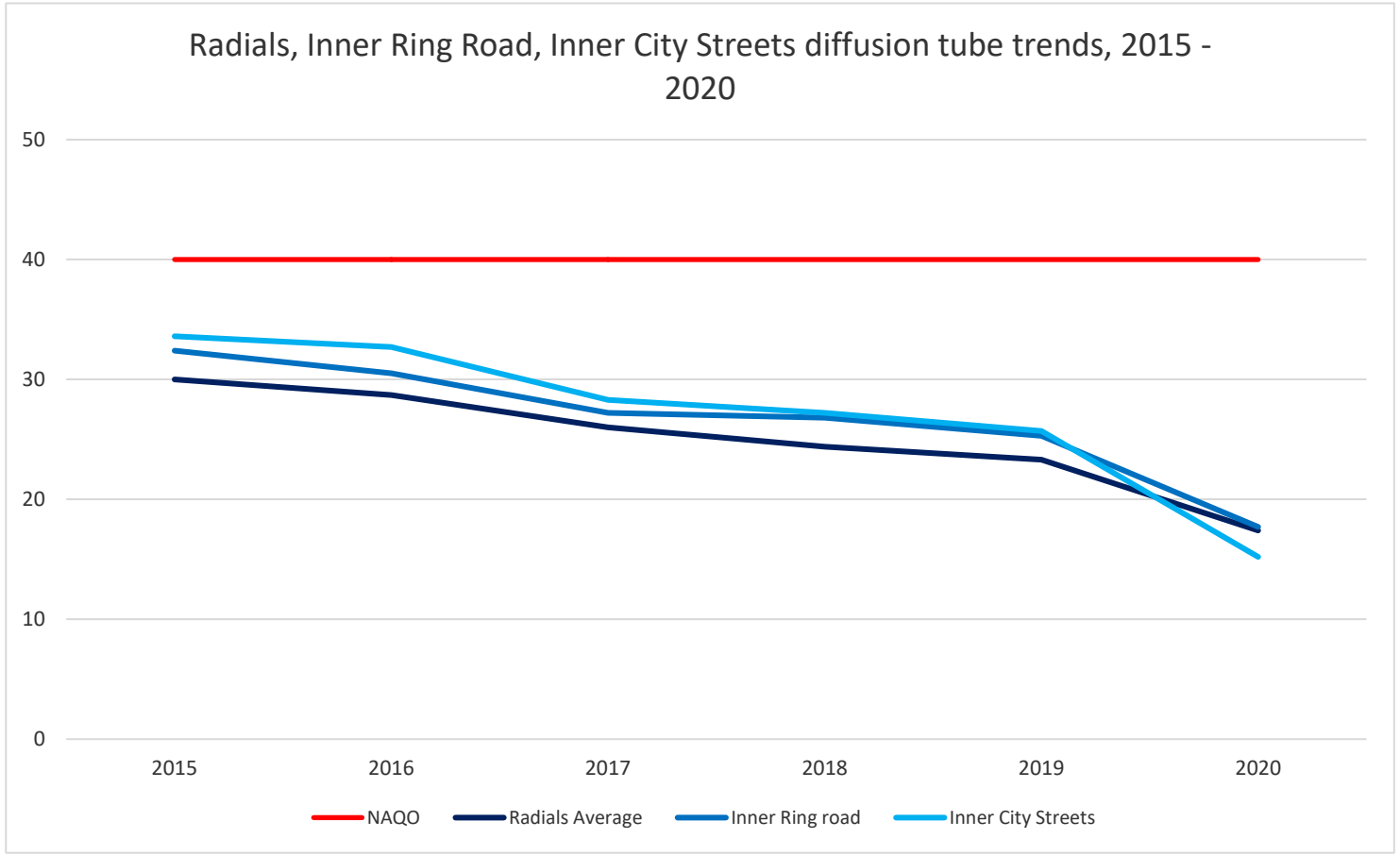
Cambridge City Council has split the diffusion tube data in groups based on the type of location or specific area of interest (typically related to areas with considerable development) in which they are located.

Figure A.2a – Trends in Annual Mean NO_2 Concentrations for Background and Urban Background sites



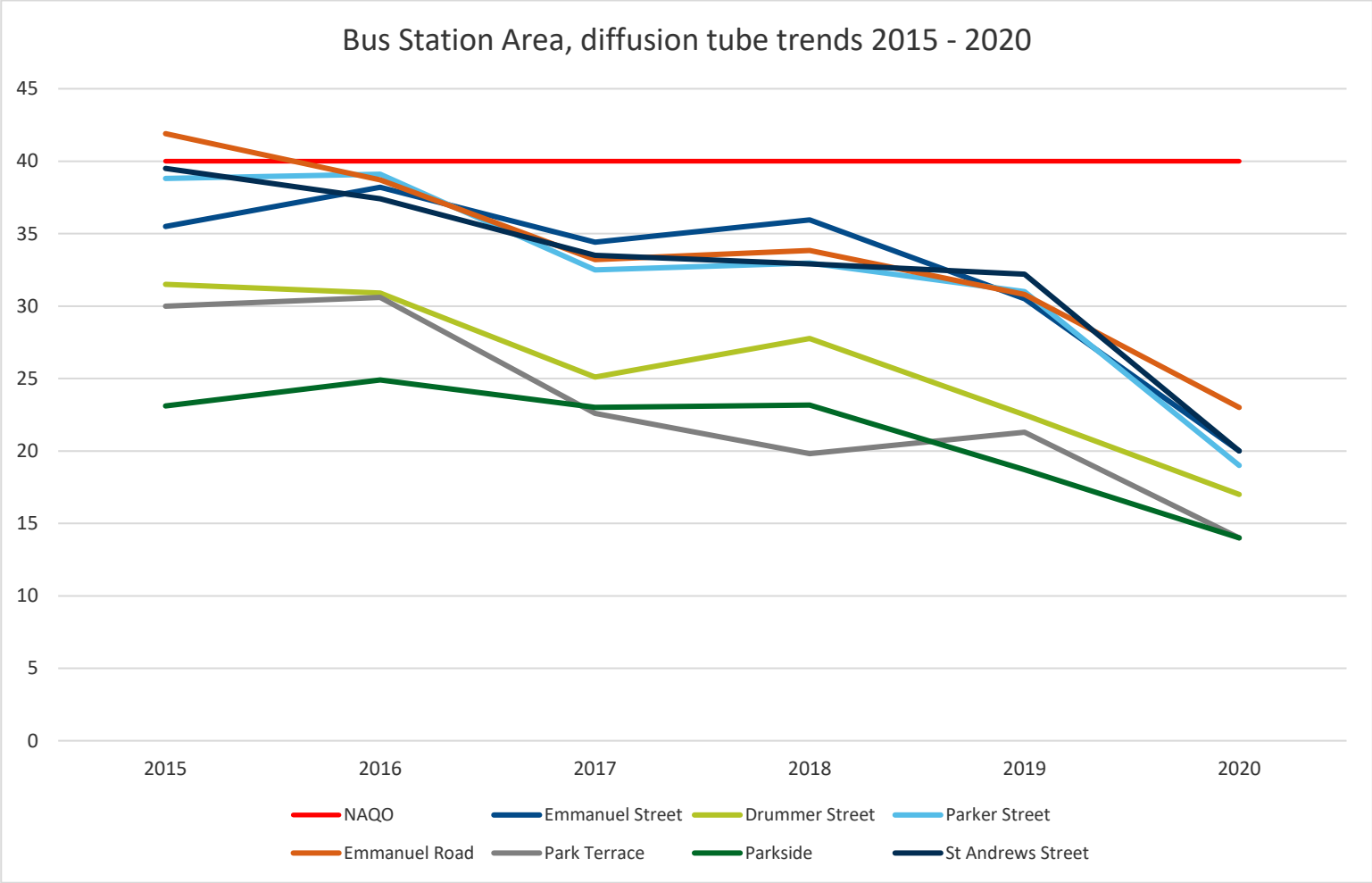
The annual mean nitrogen dioxide concentrations fell by around 4 micrograms per cubic metre in 2020 – a greater drop than in previous years.

Figure A.3b – Trends in Annual Mean NO_2 Concentrations for Radial roads, the Inner Ring Road and Inner City streets



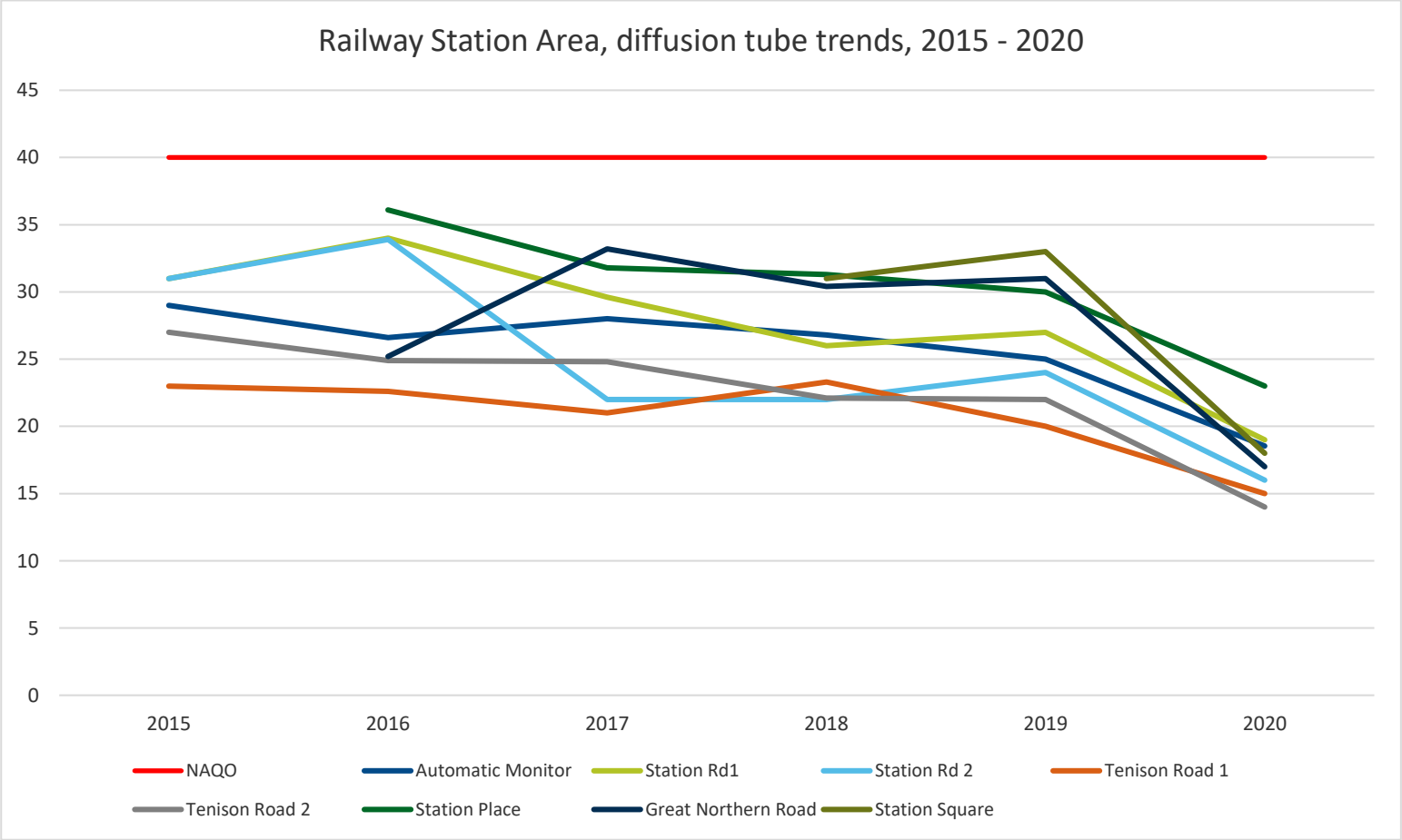
The annual mean nitrogen dioxide concentrations fell by around 6 micrograms per cubic metre in the radial roads, 8 micrograms per cubic metre in the inner ring roads and 10 micrograms per cubic metre in the inner city streets in 2020 – a greater drop than in previous years.

Figure A.4c – Trends in Annual Mean NO2 Concentrations for the Bus Station Area



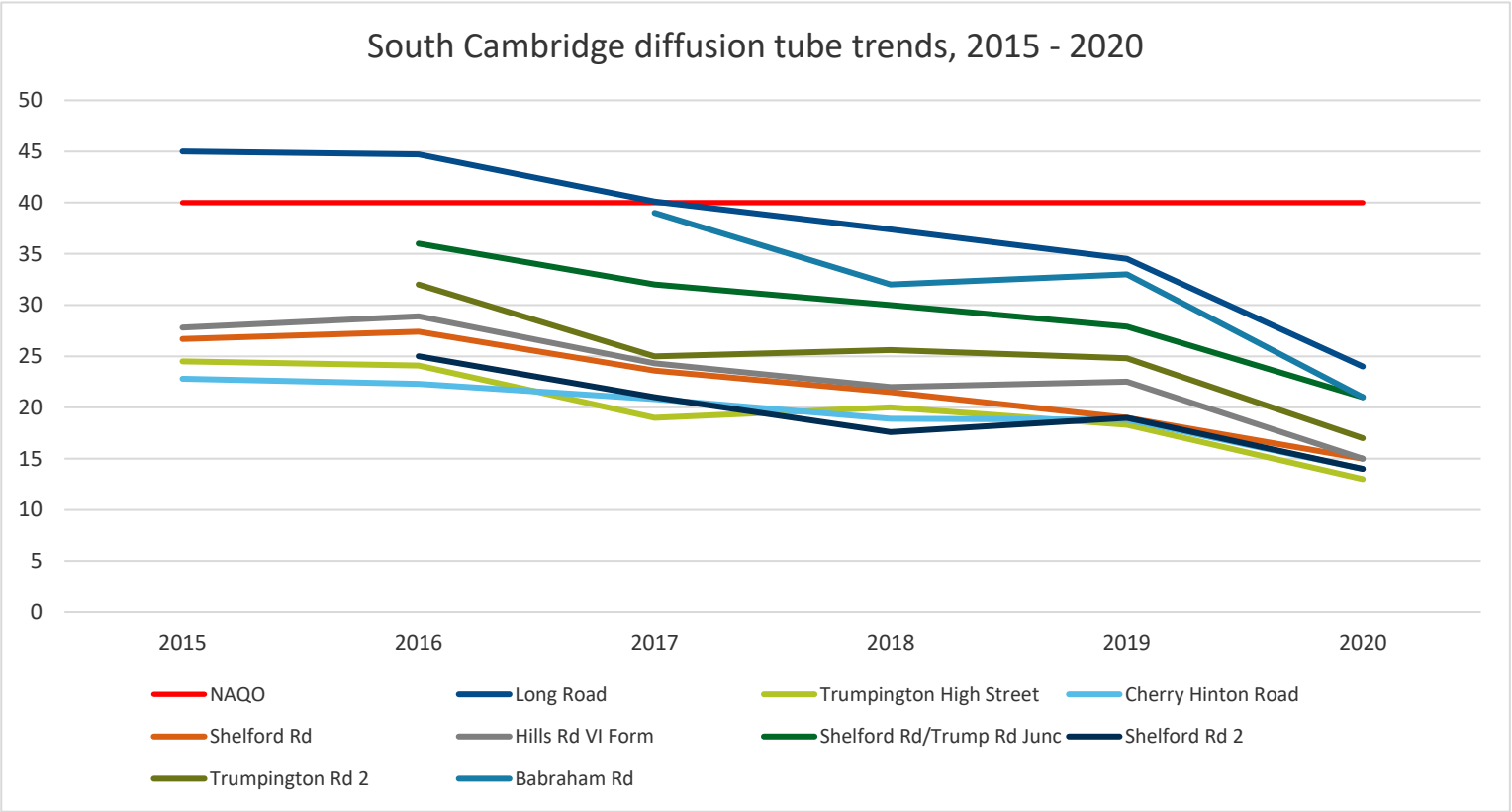
The annual mean nitrogen dioxide concentrations fell by around 9 micrograms per cubic metre in 2020 – a greater drop than in previous years and consistent with the fall in the inner city streets.

Figure A.5d – Trends in Annual Mean NO2 Concentrations for the Railway Station Area



The annual mean nitrogen dioxide concentrations around the railways station fell by around 9 micrograms per cubic metre in 2020 – a greater drop than in previous years.

Figure A.6e – Trends in Annual Mean NO2 Concentrations in southern Cambridge



The annual mean nitrogen dioxide concentrations in the southern part of Cambridge fell by around 7 micrograms per cubic metre in 2020 – a greater drop than in previous years.

Data for 2021 will be interesting. We anticipate that measured concentrations will be lower than otherwise expected, in part because of lockdown at the beginning of the year; also because at the time of writing traffic levels have not yet returned to usual in the city.

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
CM1 Gonville Place	545508	257828	Roadside	99.8	99.8	0	0	0	0	0
CM2 Montague Road	546057	259487	Roadside	99.8	99.8	0	0	1	0	0
CM3 Newmarket Road	546317	258900	Roadside	94.4	94.4	0	0	0	0	0
CM4 Parker Street	545366	258391	Roadside	97.7	97.7	0	0	0	0	0
CM5 Regent Street	545289	258118	Roadside	83.0	83.0	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.

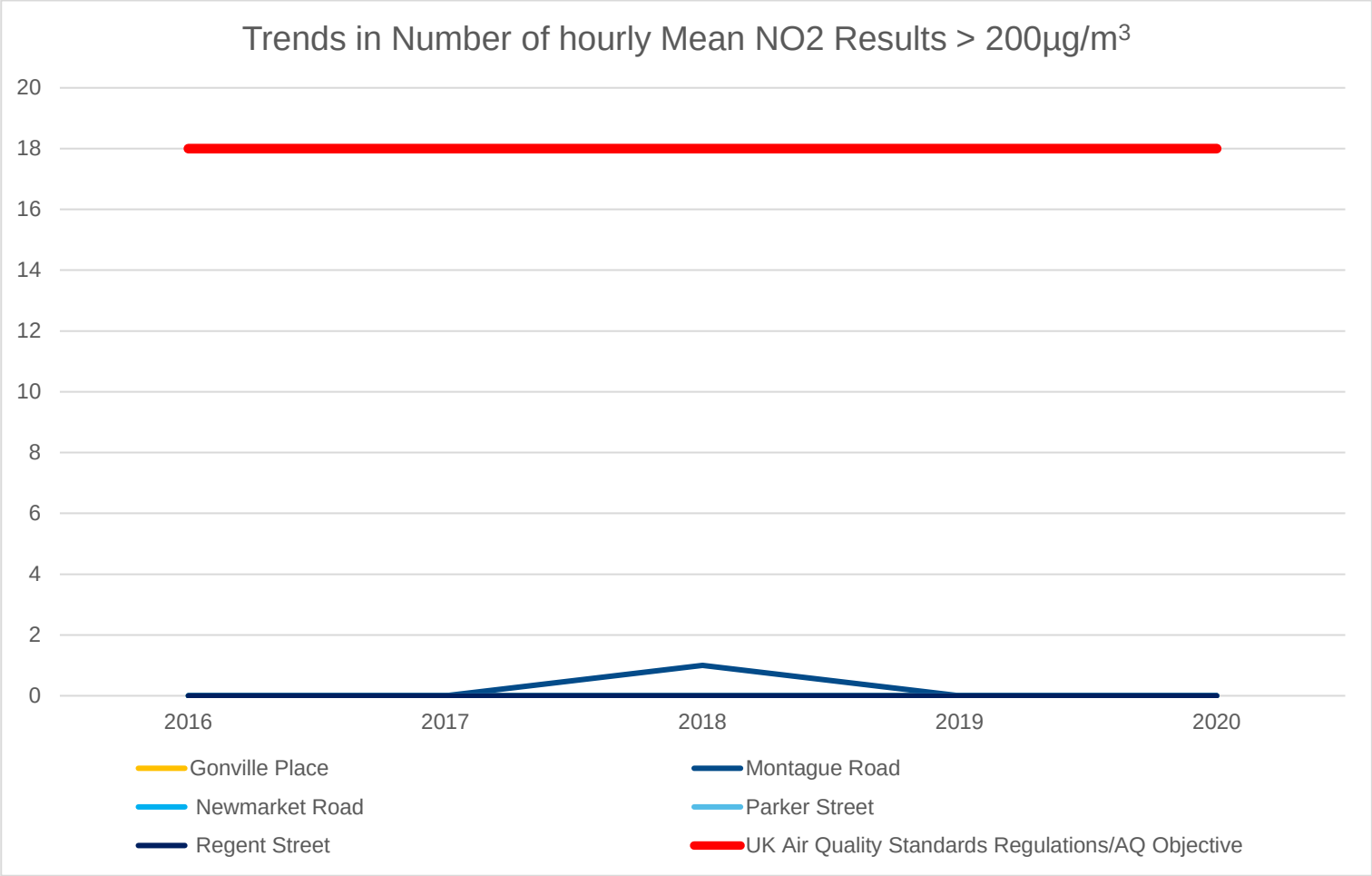
Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

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%).

Figure A.7 – Trends in Number of NO_2 1-Hour Means > 200µg/m^3



There has only been one exceedance of the nitrogen dioxide hourly mean in the past 5 years in Cambridge.

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 2020 (%) (2)	2016	2017	2018	2019	2020
CM1 Gonville Place	545508	257828	Roadside	98.8	98.8	20	18	19	19	15
CM2 Montague Road	546057	259487	Roadside	99.5	99.5	22	20	21	22	19
CM4 Parker Street	545366	258391	Roadside	96.1	96.1	22	21	23	21	17

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

Notes:

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

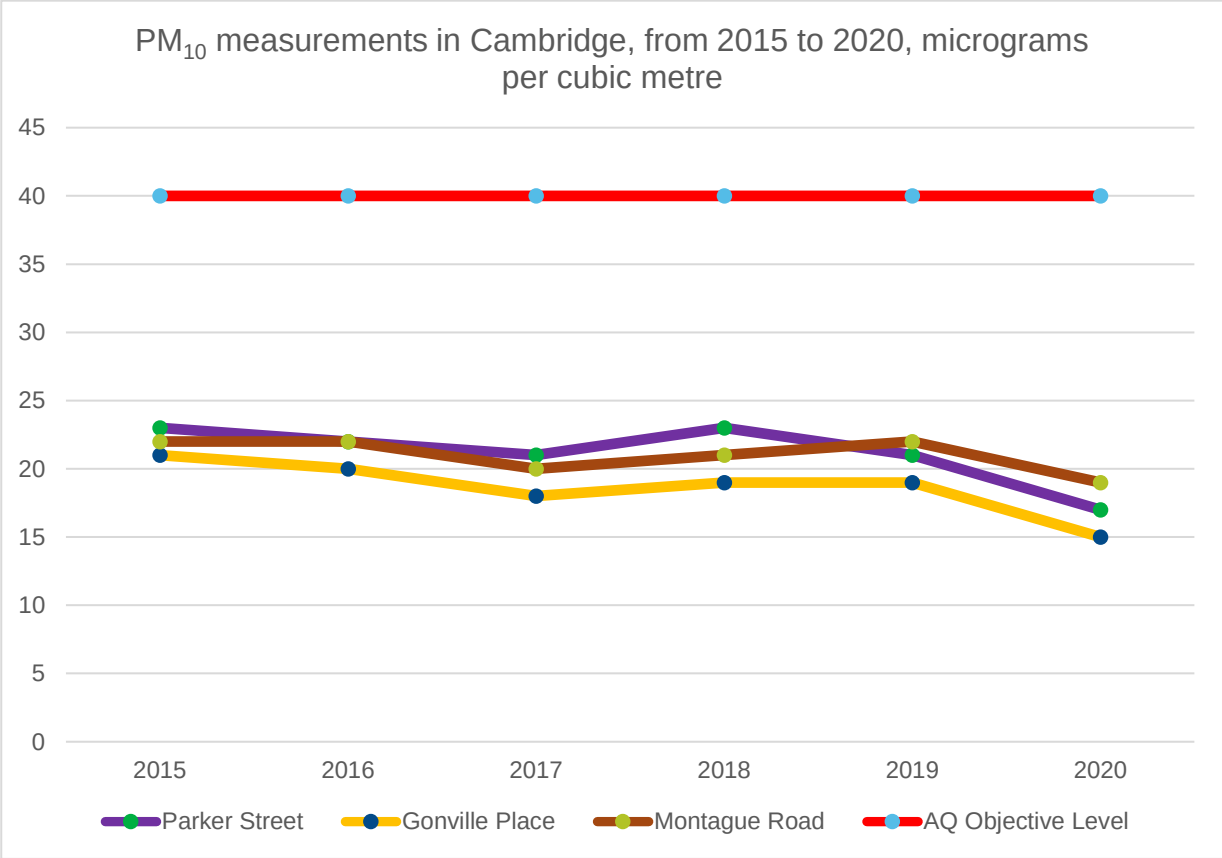
Exceedances of the PM_{10} annual mean objective of 40$\mu g/m^3$ are shown in **bold**.

All means have been "annualised" as per LAQM.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.8 – Trends in Annual Mean PM_{10} Concentrations



The overall trend from 2015 – 2019 was fairly flat with some variation between 20 and 25 micrograms per cubic metre. All measurements were just under 20 micrograms per cubic metre in 2020; this is tentatively assigned to the lower traffic levels during periods of lockdown.

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
CM1 Gonville Place	545508	257828	Roadside	98.8	98.8	1	3	1	2	0
CM2 Montague Road	546057	259487	Roadside	99.5	99.5	2	3	1	6	0
CM4 Parker Street	545366	258391	Roadside	96.1	96.1	4	4	1	5	0

Notes:

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

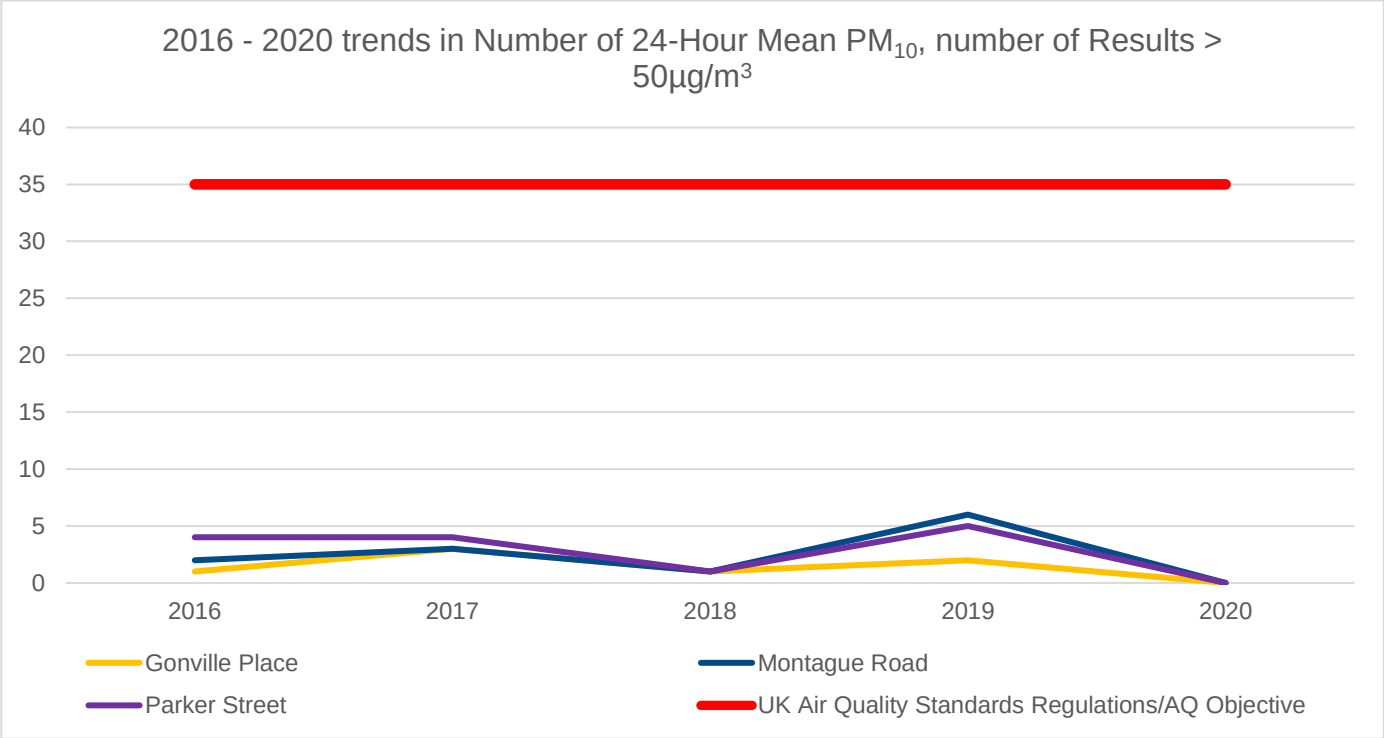
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

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%).

Figure A.9 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3



The number of measured exceedances of the 24-hour average PM_{10} levels remains well below the National Air Quality Objective; the number has only occasionally been high in the past, related to construction dust.

Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (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 2020 (%) (2)	2016	2017	2018	2019	2020
CM1 Gonville Place	545508	257828	Roadside	98.0	98.0	0	0	0	0	0
CM3 Newmarket Road	546317	258900	Roadside	90.0	90.0	0	0	0	0	0

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

Notes:

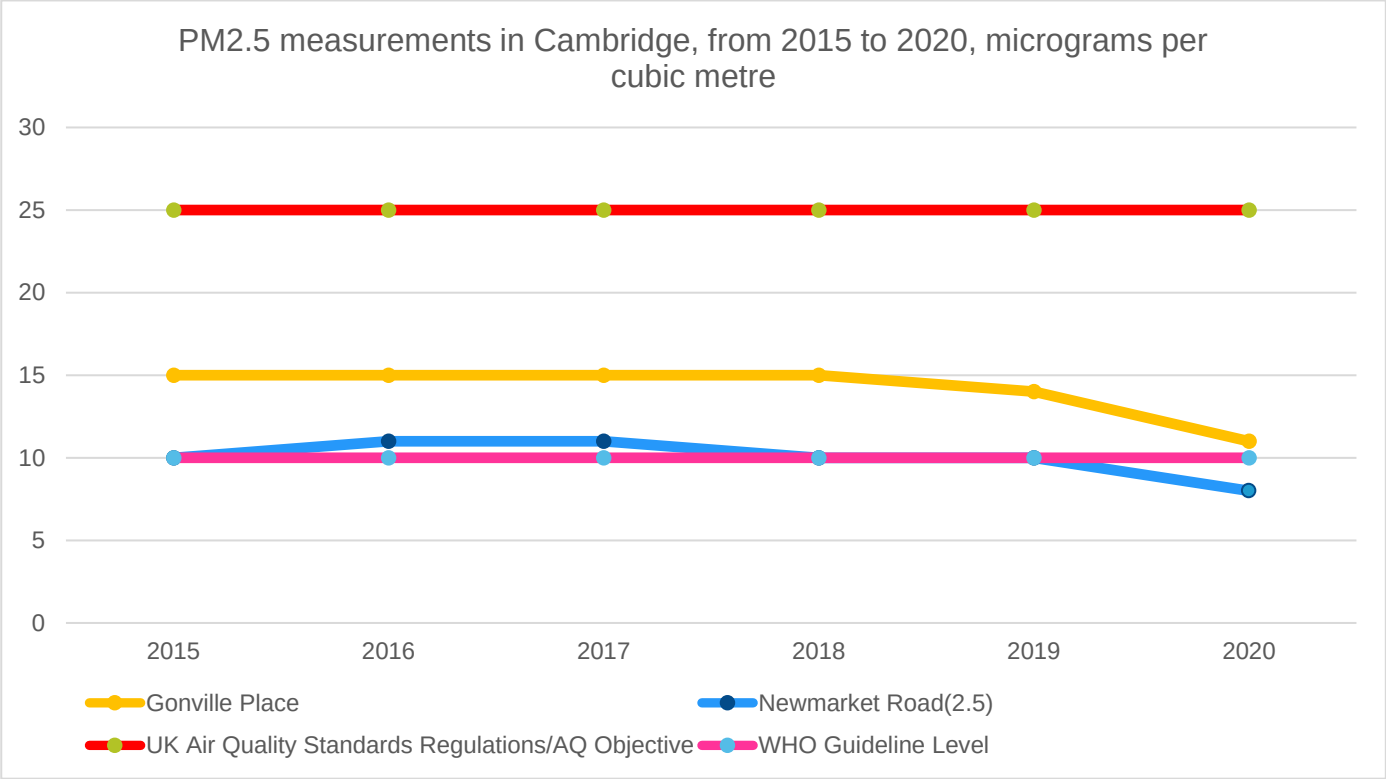
The annual mean concentrations are presented as µg/m^3.

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



$PM_{2.5}$ annual mean concentrations are measured at two locations in Cambridge. This chart shows the overall trend from 2015 – 2019 was fairly flat with some variation between 10 and 15micrograms per cubic metre. All measurements were below 11 micrograms per cubic metre in 2020; this is tentatively assigned to the lower traffic levels during periods of lockdown. The two flat lines are the UK Air Quality Standards (25 micrograms per cubic metre) and the World Health Organisation Guideline Level (10 micrograms per cubic metre) – measured levels at Gonville Place (busy and congested crossroads) were above the WHO guideline level in 2020, even with less traffic. The Defra background level estimate for $PM_{2.5}$ is between 9 and 10 micrograms per cubic metre in Cambridge.

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 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
1	545220	258357		45.2	44.8	17.9	15.6	15.5	15.7	29.3	28.5	33.7	43.4	39.7	29.9	20.2	-	
2	544292	261202	31.1	18.8	22.9	18.2	16.1	19.6	12.4	20.0	22.3	23.5			20.5	13.8	-	
3	544677	258992	29.4	19.4	17.6	11.3	10.9	12.4	11.8	17.5	19.4	18.8	25.7	25.5	18.3	12.4	-	
4	544492	259008	54.4	38.5	32.2	17.1	17.0	20.0	17.9	27.2	27.5	31.8	35.2	37.3	29.7	20.1	-	
5	544770	258112	35.4	21.0	15.7	12.9	11.1	12.8	10.6	15.6	17.6	22.7	29.2	26.6	19.3	13.0	-	
6	544867	255709	55.9	45.5	34.9	19.1	22.2	28.5	32.5	34.8	41.8	42.4	35.9	37.8	35.9	24.3	-	
7	546181	258886	55.6	43.8	28.4	19.7		46.5	23.0			38.0	47.1	44.2	38.5	26.0	-	
8	545977	230352	32.7	22.1	19.6	12.1	11.9	16.1		16.9	18.7	22.3	29.6	26.2	20.7	14.0	-	
9	545235	258485	35.9	28.6	32.8	15.5	14.5	18.5	13.0	21.5	26.9	25.5	30.6	32.9	24.7	16.7	-	
10	545314	259777	50.9	28.7	22.7	14.1	13.1	16.0	13.1	18.6	22.0	24.3	29.6	26.4	23.3	15.7	-	
11	544811	256744	17.3	11.1	11.1	8.3	6.1	6.6	5.6	7.5	10.3	13.2	18.3	15.2	10.9	7.4	-	
12	547998	259349	56.6	38.5	38.4	24.8	16.1	24.3	18.4	24.5	27.5	27.3	36.5	30.1	30.3	20.4	-	
13	545904	258431			27.4	15.4	13.4	18.1	16.4	23.1	25.6	29.5	28.9	33.9	23.2	15.7	-	
14	546080	257944	41.1	19.5	20.7	16.6	15.9	18.1	14.3		22.6	24.7	31.5	32.0	23.4	15.8	-	
15	542744	260046	36.7	24.8	18.4	10.6	8.3	10.6	11.4	12.0	18.4	20.1	28.4	26.2	18.8	12.7	-	
16	545279	258135	42.3	34.0	15.7	13.8	12.8	15.3	19.6	24.0	27.7	29.9	33.4	33.8	25.2	17.0	-	
17	547216	258286	37.3	20.7	17.4	14.9	10.3	15.5	15.4	20.6	24.8	27.9	31.5	31.5	22.3	15.1	-	
18	544884	258098	42.4	37.8	25.3	13.7	12.1	15.9	16.0		30.9	28.9	32.3	36.3	26.5	17.9	-	

19	543100	260344	29.9		15.8		8.7	10.4	10.7	14.0	17.2		27.4	21.9	17.3	11.7	-	
20	546083	259150	45.9	19.1	24.2	24.7	18.2	24.3	15.6	29.0	28.5	34.0	40.5	39.3	28.6	19.3	-	
21	544425	259560	36.3	27.0	26.4	17.2	17.0	16.8	15.3	22.1	26.4	24.7	31.4	19.3	23.3	15.8	-	
22	543784	259093	47.7	31.6	30.7	18.4	16.2	20.6	17.0	23.9	26.0	28.9	29.7	31.2	26.8	18.1	-	
23	543761	259813	26.2	18.4	17.3	11.9	11.5	13.6	12.4	15.3		17.9	21.6	24.1	17.3	11.7	-	
24	544308	259664	49.9	38.5	30.8	17.1		18.2	18.5	21.7	26.3	28.3	33.3	26.8	28.1	19.0	-	
25	544100	257473	27.3	17.2	15.7	12.3	10.2	11.7	8.9	13.7	17.1	18.0	24.9	21.9	16.6	11.2	-	
26	544943	257567	24.8	19.2	16.3	11.8	12.3	13.9	11.0	15.8	19.5	18.8	25.3	24.5	17.8	12.0	-	
27	544575	255307	35.3	19.5	19.3	12.9	8.7	12.9	8.6	14.7	18.9	20.2	30.7	28.4	19.2	13.0	-	
28	546961	255132	46.4	39.7	23.9	19.8	22.8	28.0	28.0	31.9	35.0	31.0	41.8	33.7	31.8	21.5	-	
29	548331	256252	34.6	25.2	29.8	14.1	11.4	15.5	14.6	16.6	21.9	25.6	24.5	21.6	21.3	14.4	-	
30	545693	260473	37.3	24.8	20.8	14.8	12.4		14.1	17.2	22.3	26.5	28.0	24.2	22.0	14.9	-	
31	544529	257730	48.7	31.4	28.1	24.8	18.8	26.6	15.8	26.8	33.9	33.1	37.7	35.7	30.1	20.3	-	
32	545893	257234	39.1	23.4		15.8	10.2	16.4	14.7	23.5	28.4		27.4	28.1	22.7	15.3	-	
33	545333	259439	41.9		31.2	23.9	20.7	29.3	20.0	39.0	35.2		34.8	41.0	31.7	21.4	-	
34	545390	258390	50.3	35.5	29.2	15.6	13.6	19.9	21.4	27.7			36.4	35.9	28.6	19.3	-	
35	546163	258983	36.1	25.2	18.8	12.5	9.9	13.9	12.3	14.4	18.1	23.2	26.1	29.7	20.0	13.5	-	
36	546596	257594	23.5	18.2	17.0	10.8	9.7	10.8	12.1	12.7	14.8	19.6	25.6	22.5	16.4	11.1	-	
37	545885	260088	30.7	18.6	13.9	12.0	9.9	10.4	9.9	11.9	16.2	19.7	21.5	21.0	16.3	11.0	-	
38	545566	259579	41.9		24.5	15.3	12.7	14.7	15.2	17.7	24.6	26.6	32.3	33.3	23.5	15.9	-	
39	545710	258782	47.3	28.2		16.5	13.9	18.1	17.4	22.9	28.2	31.1	41.7	39.1	27.7	18.7	-	
40	545405	258521		37.8		19.0	16.0	26.8	29.4	37.0	44.4	40.9	42.2	47.2	34.1	23.0	-	
41	545162	258240		31.9	27.5	14.3	13.8	16.9	15.2	22.9	29.6		35.0	34.1	24.1	16.3	-	

42	544981	257890	33.2	23.0	15.9	12.0	9.3	11.3	11.1	16.3	19.3	22.0	29.9	30.0	19.4	13.1	-	
43	545271	257675	45.5	31.1	27.6	16.2	14.3	18.1	19.2	23.8	32.6	35.2	30.8	36.7	27.6	18.6	-	
44	545430	258271	36.8	23.3	22.0	12.5	11.3	13.8	14.7	20.2	21.4	21.9	27.0	21.9	20.6	13.9	-	
45	545135	258391	56.2	36.1	34.0	16.6	13.7		15.8	25.0	27.8	27.9	41.5	40.6	30.5	20.6	-	
46	545549	258283	35.0	20.9	19.0	11.9		12.2	13.3	15.9	18.3	21.2	25.0	33.4	20.6	13.9	-	
47	545508	257828	42.3	26.8				23.3	19.3	31.8	31.5	36.2	33.0	30.9	-	-	-	Triplicate Site with 47, 48 and 49 - Annual data provided for 49 only
48	545508	257828	41.7	30.4			18.0	23.9	19.7	33.4	31.6	35.2	31.1	35.7	-	-	-	Triplicate Site with 47, 48 and 49 - Annual data provided for 49 only
49	545508	257828	42.0	33.1			18.3	23.1	20.1	29.0	34.3	35.3	32.0	33.4	29.8	20.1	-	Triplicate Site with 47, 48 and 49 - Annual data provided for 49 only
50	545854	257229	34.8	21.4	15.9	21.0	14.3	18.7	13.2	25.3	25.0	27.2	30.8	34.3	23.5	15.9	-	
51	544960	254220	29.9	16.5	18.4	16.1	15.1	18.9	16.8	20.6		27.9	31.2	31.6	22.1	14.9	-	
52	546019	257300	37.3	25.0	23.6	15.6	13.9	16.6	14.0	21.3	26.0	27.6	35.4	24.8	23.4	15.8	-	
53	545897	257325	42.4	28.8		18.8	17.3	18.8		23.9	26.0	28.3	38.6	41.6	28.5	19.2	-	
54	546034	257683	42.4	21.4	19.0	12.5		12.1	12.0	15.5	19.9	24.9	33.3	32.2	22.3	15.1	-	
55	546005	257405	33.6	25.3	16.2	16.4	13.7	15.3	12.0	16.8	20.5	22.1	32.8	31.6	21.4	14.4	-	
56	546602	258796	40.8	25.5	23.3	20.1	16.7	22.1	16.3	24.0	25.3	25.8	33.8	34.4	25.7	17.3	-	
57	546060	257389	53.5	29.7	26.1	16.2	14.5	16.7	13.5	19.8	26.1	30.6	32.5	32.8	26.0	17.6	-	
58	546080	257092	58.2	42.0	37.0	17.7	22.6	24.6	34.4	35.1	43.7		27.5	33.7	34.2	23.1	-	
59	548858	257162	31.3	16.8	17.3	12.9	11.9	11.8	10.5	13.3	18.6	19.5	23.4	26.8	17.8	12.1	-	
60	547917	258942	40.1	23.6	25.6	15.0	15.2	18.2	16.1	19.3	26.6	29.9	33.5	28.2	24.3	16.4	-	
61	546341	258882	41.3	29.8	24.8	17.1	18.1	33.0	22.4		40.2	45.4		50.1	32.2	21.8	-	
62	547181	257566	41.0	21.5	21.5	16.0	11.9	15.5	10.0	19.7		21.5	29.7	29.0	21.6	14.6	-	
63	546177	257309	57.7	35.6	28.2	15.8	13.6	16.9	14.9	22.9	27.1	30.0		28.1	26.4	17.9	-	
64	544952	258856	39.9	23.8	17.7	14.4	10.2			18.5	23.4	22.8	27.3	30.4	22.8	15.4	-	

65	545896	257025	35.6	21.1	16.5	24.5	17.2	18.4	11.0		23.0	23.2	42.0	30.1	23.9	16.1	-	
66	544580	254692	51.1	35.8	27.2	27.0	18.7	22.8	24.2	26.9	33.9	36.3	39.9	26.5	30.9	20.9	-	
67	544614	254646	35.9	20.0	19.5	14.3	12.0	13.8	14.1	17.7	20.2	20.4	30.9	26.9	20.5	13.8	-	
68	545211	254217	40.0	25.1	19.6	6.0	9.7	10.6	10.2	13.7	19.1	24.5	21.5	21.6	18.5	12.5	-	
69	546854	255405	33.6	25.1	14.8	17.2	12.6	16.7	15.8	18.7	24.5	30.9	35.3	29.1	22.9	15.4	-	
70	546693	255379	28.6	24.2	27.9		15.7	17.1	19.8	21.9	28.1	25.0	30.9	32.9	24.7	16.7	-	
71	545245	256860	38.6	22.0		12.7		15.0			32.9	26.1	30.8	25.7	25.5	14.5	-	

☒ **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**

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

☒ **Cambridge City 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 Cambridge City Council During 2020

Cambridge City Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Cambridge City Council During 2020

Cambridge City Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

Socotec UK Ltd supply and analyse the nitrogen dioxide tubes for Cambridge City Council. The tubes are prepared by spiking acetone: triethanolamine (50:50) onto the grids prior to being assembled. The tubes are desorbed with distilled water and the extract is analysed using a segmented flow auto-analyser with ultraviolet detection. Socotec UK Ltd, Didcot is one of the laboratories that follows the AIR PT inter-comparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes; SOCOTEC currently holds the highest rank of a **Satisfactory** laboratory.

Exposure periods for the diffusion tubes are those of the UK Nitrogen Dioxide Diffusion Tube Network run by National Physical Laboratory, with the tubes being changed every four or five weeks.

QA/QC procedures are as detailed in the UK NO_2 Diffusion Tube Network Instruction Manual. Some diffusion tube data were rejected from the dataset in line with guidance. Low concentrations are rare at urban background or roadside sites and are likely to result from an analytical problem or a faulty tube and therefore are rejected, particularly if they are an isolated occurrence. High concentrations are included unless there is a reason to reject them.

We were informed of potential contamination of a batch of diffusion tubes in March 2020. Grids that had exceeded the time limit for tube construction were mistakenly re-used during manufacture before they were cleaned and dispatched before the cross-check analysis had been performed. The results of the analysis at Socotec indicate that the contamination ranges from no contamination to a positive bias of 0.5 micrograms of NO2 on the tubes, equivalent to approximately 0 - 8 ug/m3 or 0 to 4 ppb positive bias on the result. We were informed that UKAS accreditation will have to be removed.

The March 2020 results were looked at closely for any indication of higher than expected results, however, no noticeable impact was observed, so we have accepted the reported results as provided.

Monitoring was completed in adherence with the Diffusion Tube Monitoring Calendar in 2020.

Diffusion Tube Annualisation

All diffusion tube monitoring locations, but one, within Cambridge City Council recorded data capture of 75% therefore it was required to annualise the monitoring data for Diffusion Tube 71 using the Diffusion Tube Data Processing Tool.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 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 about 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.

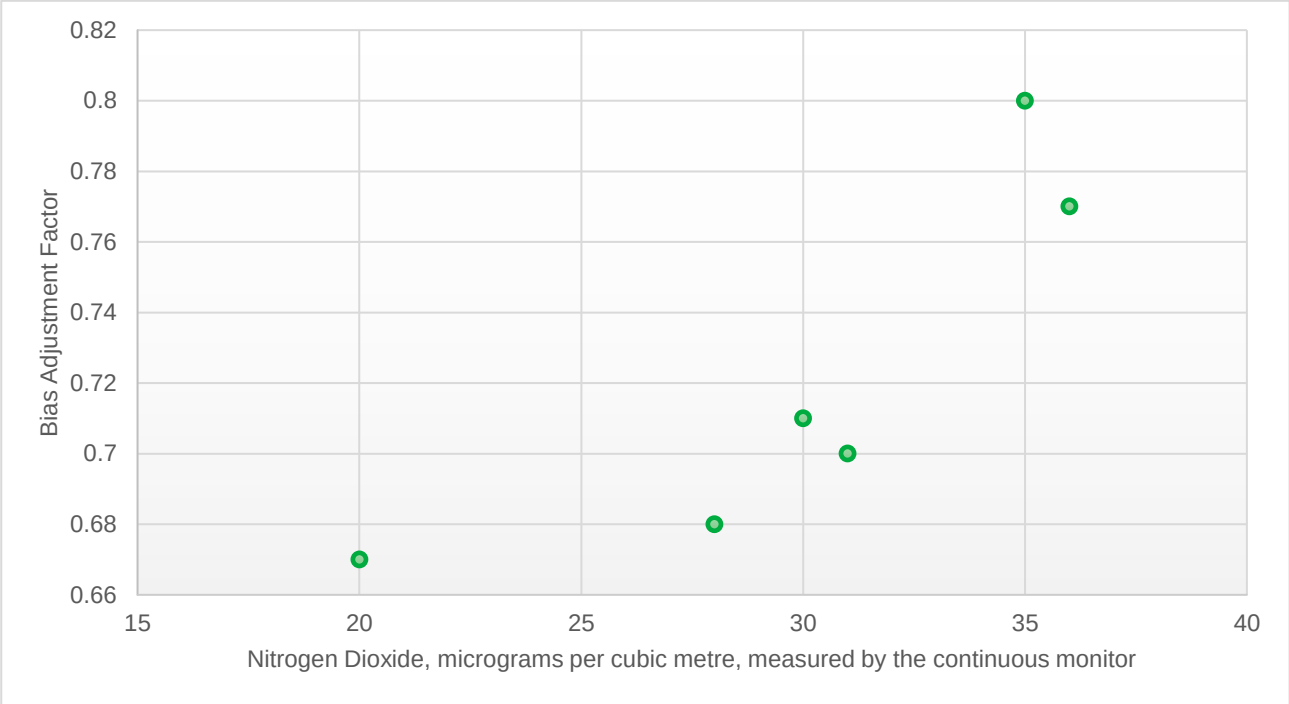
Cambridge City Council have applied a local bias adjustment factor of 0.68 to the 2020 monitoring data. A summary of bias adjustment factors used by Cambridge City Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.68
2019	Local	-	0.68
2018	Local	-	0.71
2017	Local	-	0.7
2016	Local	-	0.77

The results in this report are bias-adjusted using a locally derived co-location factor. For 2020 this is 0.68 compared with a nationally derived factor of 0.76 for the ESG Didcot 50%TEA in acetone method. This locally derived factor compares the results from the continuous monitor with the average from the triplicate tubes all located at Gonville Place, Cambridge. The locally derived factor is used as it is more representative of the local situation compared with the national factor, as well as for consistency; this is the approach that Cambridge City Council has taken since first carrying out bias-adjustment calculations.

The bias-adjustment factor has been falling gradually as measured levels of nitrogen dioxide have fallen at the triplicate site Gonville Place, as shown in the graph below. We have discussed this with various air quality professionals in recent years; our understanding is that the relationship between the diffusion tube measurements and the continuous monitor measurements drifts at lower levels of nitrogen dioxide (as measured by the continuous monitor).



	Nitrogen Dioxide	Bias Adjustment Factor
2015	35	0.8
2016	36	0.77
2017	31	0.7
2018	30	0.71
2019	28	0.68
2020	20	0.67
	RSQ 0.70	

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Cambridge City Council required distance correction during 2020.

QA/QC of Automatic Monitoring

Cambridge City Council has five continuous monitors; all are at roadside sites. The monitoring station at Regent Street is situated at the offices of Cambridge City Council in Mandela House. It is part of the National Automatic Urban Network (AURN) on behalf of DEFRA and has been in place since 1993. Monitors for Gonville Place and Parker Street were commissioned in 1998. The monitor at Newmarket Road was commissioned in 2001 in response to perceived data shortfalls for urban feeder roads following the first round of R&A. The monitoring station at Montague Road was commissioned in April 2007, using the monitors formerly located in Silver Street.

Each of the sites is calibrated and maintained every 2-3 weeks by the Local Site Operator (LSO), Cambridge City Council. The sites are serviced every six months. Our Equipment Support Unit (ESU) services are provided by Matts Monitors. The sites are audited by Ricardo Energy & Environment either as part of the AURN or through the 'Calibration Club'. All data is collated and ratified externally by Ricardo Energy & Environment. The results are ratified and returned as hourly sequential data.

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

The PM_{10} monitors have had the BAM Gravimetric Equivalent correction factor applied by the QA/QC contractor.

The $PM_{2.5}$ monitor at Gonville Place does not require correction as it has a heated inlet.

The $PM_{2.5}$ monitor at Newmarket Road has had the conventional TEOM Gravimetric Equivalent correction factor applied by the QA/QC contractor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Cambridge City Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

NO_2 Fall-off with Distance from the Road

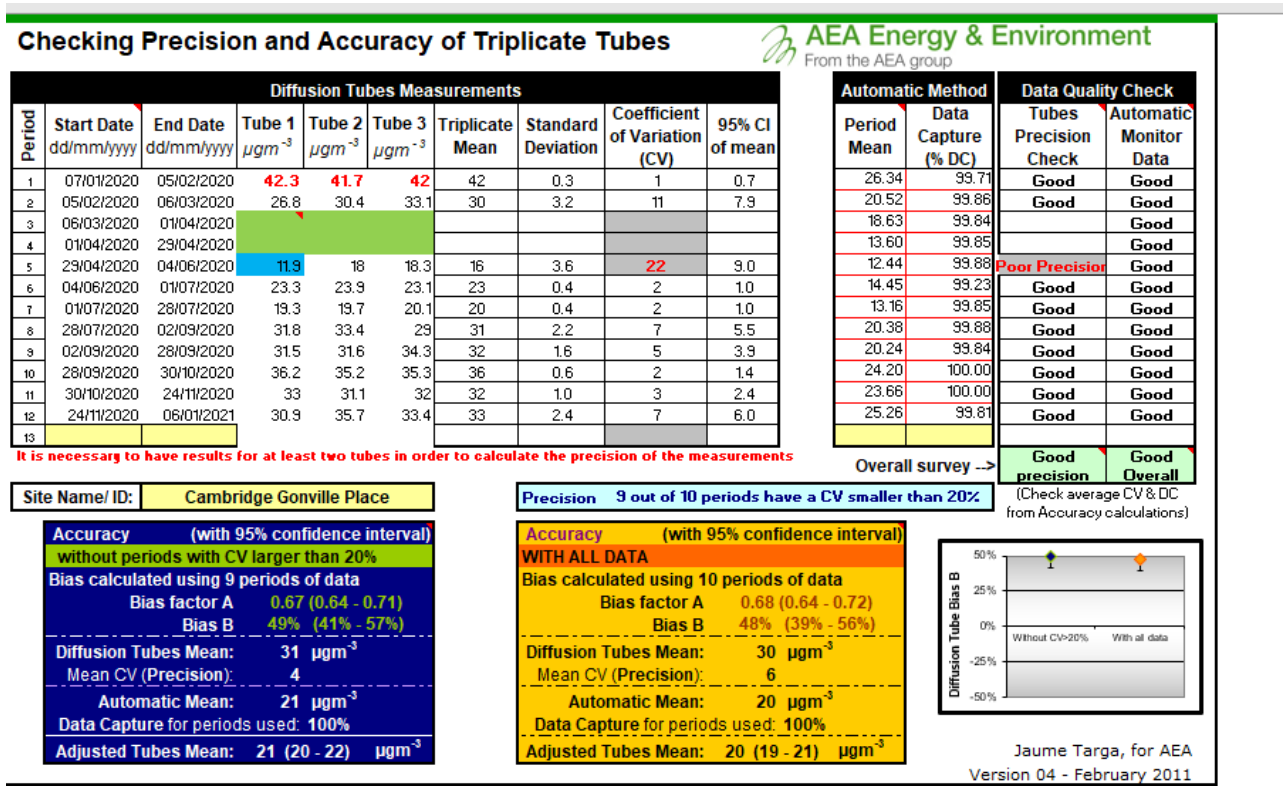
No automatic NO_2 monitoring locations within Cambridge City Council required distance correction during 2020.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Borehamwood Meadow Park	Annualisation Factor Northampton Spring Park	Annualisation Factor Wicken Fen	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
71	0.8167	0.8532	0.8581		0.8427	25.5	21.5	

Table C.3 – Local Bias Adjustment Calculation

The local bias adjustment factor was calculated using the calculator for the National Bias Adjustment Spreadsheet. A screen shot of the calculations is provided below. The bias adjustment for the 10 periods is 0.68; this is lower than the Overall Factor (national data), which is 0.76. This is discussed above.



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm⁻³	Tube 2 µgm⁻³	Tube 3 µgm⁻³	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	07/01/2020	05/02/2020	42.3	41.7	42	42	0.3	1	0.7
2	05/02/2020	06/03/2020	26.8	30.4	33.1	30	3.2	11	7.9
3	06/03/2020	01/04/2020							
4	01/04/2020	29/04/2020							
5	29/04/2020	04/06/2020	11.9	18	18.3	16	3.6	22	9.0
6	04/06/2020	01/07/2020	23.3	23.9	23.1	23	0.4	2	1.0
7	01/07/2020	28/07/2020	19.3	19.7	20.1	20	0.4	2	1.0
8	28/07/2020	02/09/2020	31.8	33.4	29	31	2.2	7	5.5
9	02/09/2020	28/09/2020	31.5	31.6	34.3	32	1.6	5	3.9
10	28/09/2020	30/10/2020	36.2	35.2	35.3	36	0.6	2	1.4
11	30/10/2020	24/11/2020	33	31.1	32	32	1.0	3	2.4
12	24/11/2020	06/01/2021	30.9	35.7	33.4	33	2.4	7	6.0
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
26.34	99.71	Good	Good
20.52	99.86	Good	Good
18.63	99.84		Good
13.60	99.85		Good
12.44	99.88	Poor Precisior	Good
14.45	99.23	Good	Good
13.16	99.85	Good	Good
20.38	99.88	Good	Good
20.24	99.84	Good	Good
24.20	100.00	Good	Good
23.66	100.00	Good	Good
25.26	99.81	Good	Good
Overall survey -->		Good precision	Good Overall

(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Cambridge Gonville Place

Precision 9 out of 10 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 9 periods of data
Bias factor A 0.67 (0.64 - 0.71)
Bias B 49% (41% - 57%)
Diffusion Tubes Mean: 31 µgm⁻³
Mean CV (Precision): 4
Automatic Mean: 21 µgm⁻³
Data Capture for periods used: 100%
Adjusted Tubes Mean: 21 (20 - 22) µgm⁻³

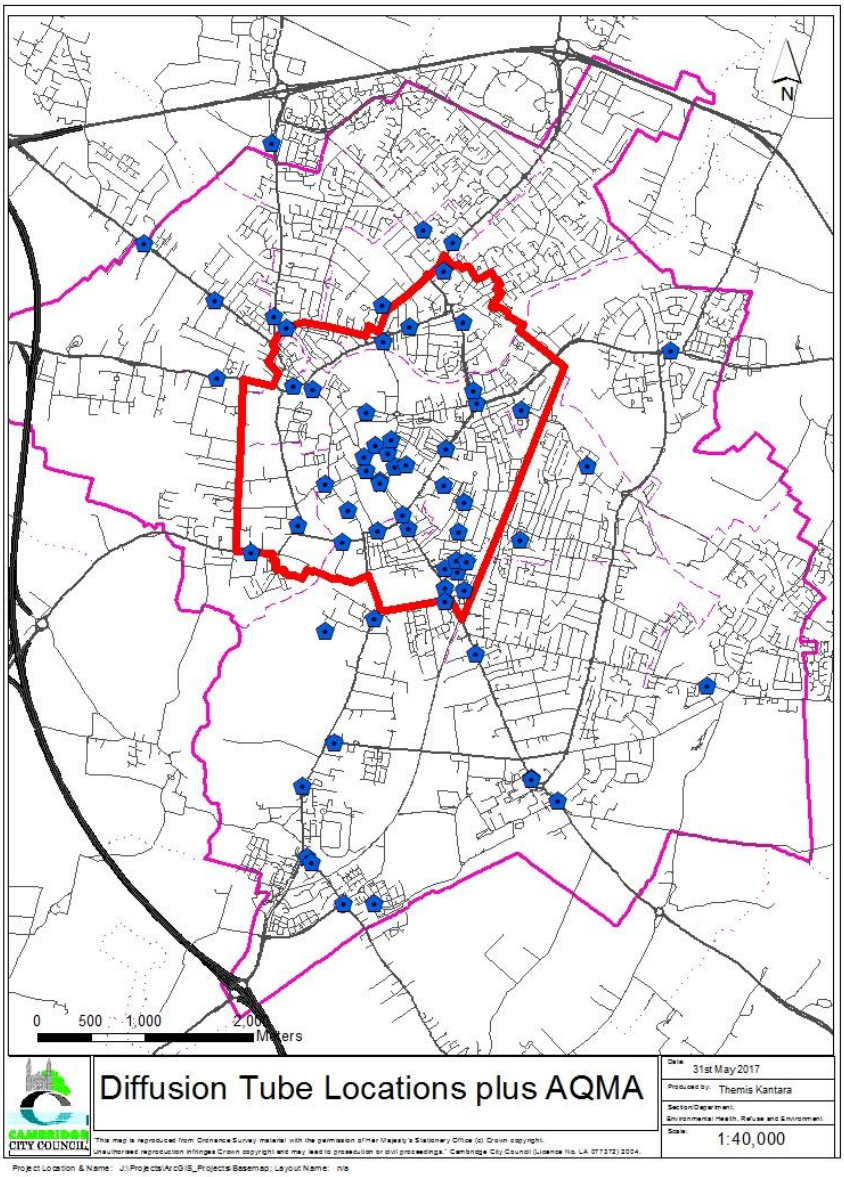
Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 10 periods of data
Bias factor A 0.68 (0.64 - 0.72)
Bias B 48% (39% - 56%)
Diffusion Tubes Mean: 30 µgm⁻³
Mean CV (Precision): 6
Automatic Mean: 20 µgm⁻³
Data Capture for periods used: 100%
Adjusted Tubes Mean: 20 (19 - 21) µgm⁻³

Jaume Targa, for AEA
Version 04 - February 2011

Notes: A single local bias adjustment factor has been used to bias adjust the 2020 diffusion tube results.

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

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



The Cambridge City Council website has a map showing the locations of the monitoring stations in Cambridge which can be zoomed in and out to discover the specific locations. A click on the icon will provide the name and number of each site.

Figure D.2 – Map of Automatic Monitoring Sites

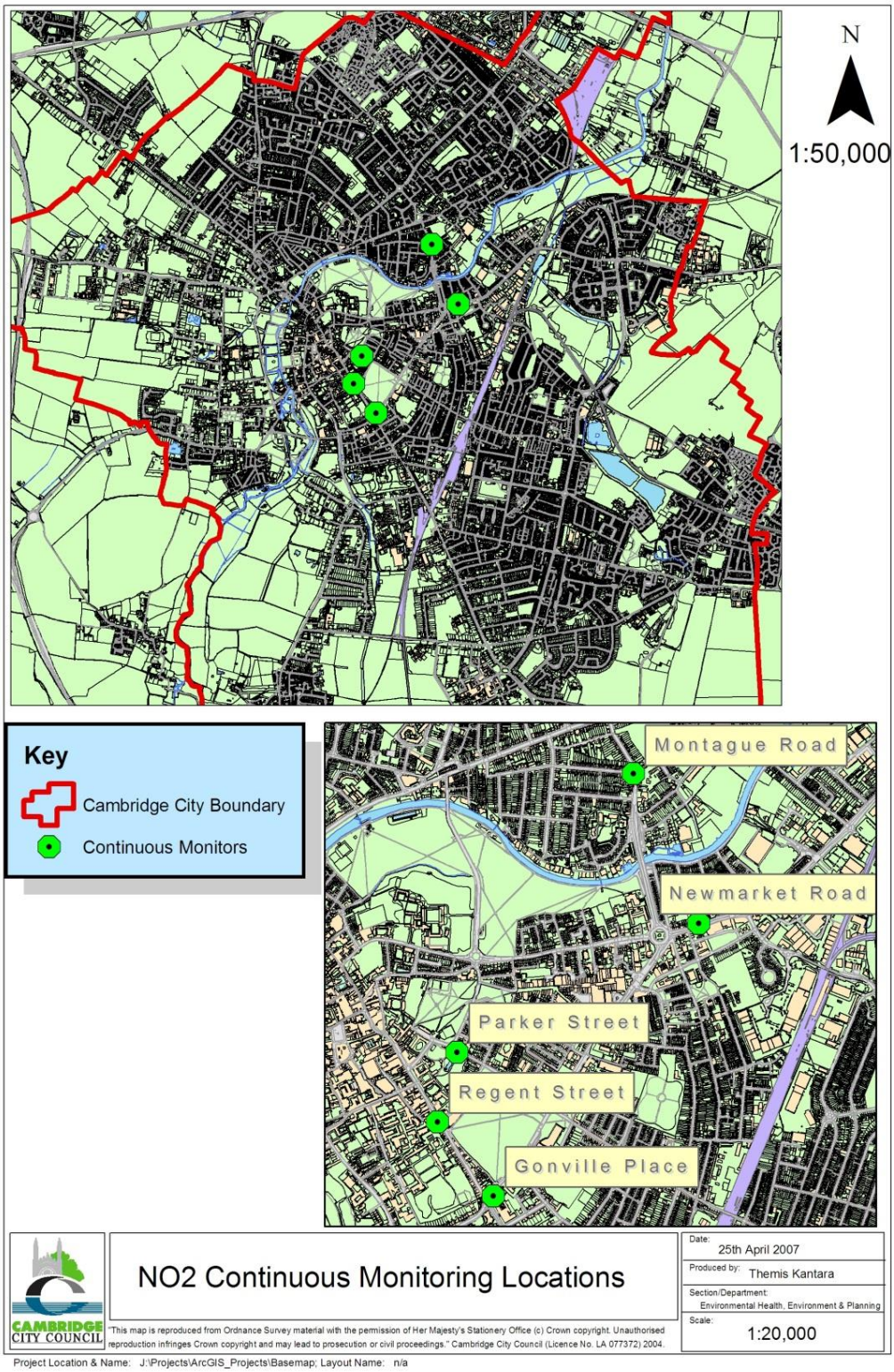
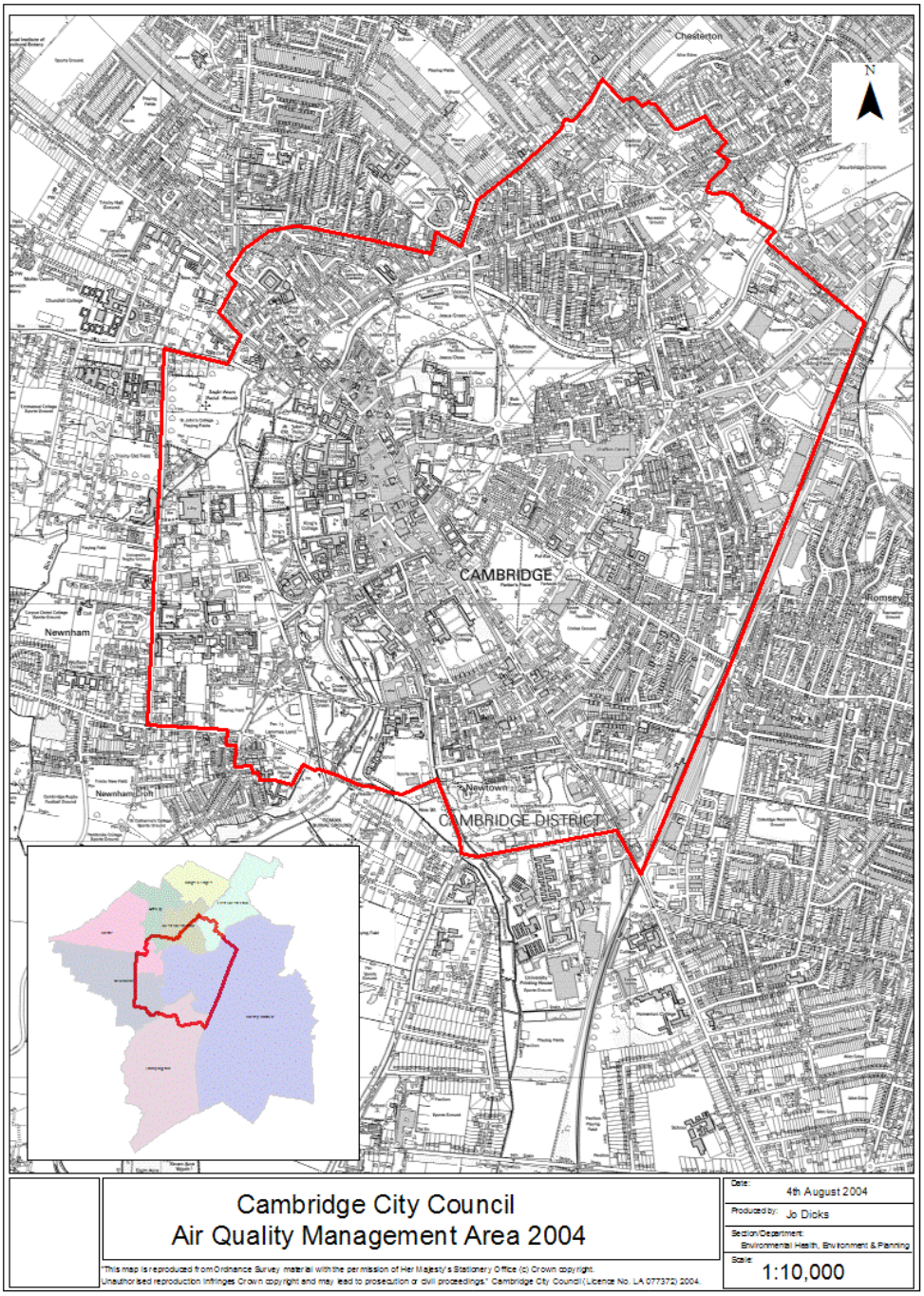


Figure D.3 – Map of Air Quality Management Area

The [Cambridge City Council website] has a map of the Air Quality Management Area.



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

[7] The units are in microgrammes of pollutant per cubic metre of air (µg/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 necessary. During this initial national lockdown (and to a lesser extent the other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data*8* 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)*9* 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

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

9 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 Cambridge

The levels of NO_2 recorded both inside and outside the AQMA in 2020 were significantly lower compared with 2019 results. The continuous monitors recorded annual means significantly lower than in 2019, especially in the city centre at Gonville Place and Parker Street. This is replicated by the diffusion tube data annual means, which demonstrate the impact depending upon the environment in which they are located. The greatest improvements in air quality are where the largest number of vehicles were no longer travelling. This list is a comparison of 2020 and 2019 average data sets.

Figure 5 List of measured falls in nitrogen dioxide levels

Type of site	Fall in measured nitrogen dioxide
Background	-3.5
Urban Background	-4
Radial roads	-6
Inner Ring Roads	-7.5
Inner City Streets	-10
Around the Bus Station	-9
Around the Railway Station	-10

Opportunities Presented by COVID-19 upon LAQM within Cambridge

Cambridgeshire County Council, via the Cambridgeshire and Peterborough Combined Authority, secured money from the Government's Emergency Active Travel Fund to implement temporary changes to the public highway, such as:

- Pop-up cycle lanes
- Wider pavements
- Safer junctions
- Bus-only routes

The cycle and walking schemes were delivered quickly, benefitting from government relaxations of certain legislation and guidance. The schemes were developed in partnership with the city and district councils to support the recovery from Coronavirus. The County Council used Experimental Traffic Regulation Orders (ETROs) and Temporary Traffic Regulation Orders (TTROs) to implement many of the schemes. Information on the schemes and their locations are listed below.

Many Cambridgeshire County Council and GCP officers were seconded to the Emergency Active Travel projects. As a result, progress on some of the ongoing projects has not been as expected.

Cambridgeshire County Council (with CPCA) projects

Location	Description	Timescale
A1301 Shelford	Widen the existing narrow cycle lanes, remove road centreline	Implemented
Girton Road, Girton	Put in cycle lanes and remove centreline	Implemented
Mill Road, Cambridge	Provisional measures that include pavement widening at points along the route and a bus gate at the railway bridge allowing two way bus / cycle / emergency service access	Implemented but temporarily uninstalled pending public consultation
Chesterton Road between Elizabeth's Way and Mitcham's Corner, Cambridge	Wide temporary cycle lanes between Elizabeth Way and Mitcham's Corner on both sides of road	Implemented
Drummer Street / Emmanuel Street / St Andrew's Street, Cambridge	Work with bus companies to review operation of city centre bus stops to manage waiting areas and allow as far as possible for social distancing as city centre activity and bus service levels build back up	Implemented
Park and Ride	Additional cycle parking spaces at the five Cambridge Park and Ride sites and the Guided Busway Park and Ride site at Longstanton. This will allow for overnight storage of bicycles used for Park and Cycle trips while social distancing limits Park and Ride capacity	Implemented
High Street, Barton	20 mph speed limit on High Street with some place to place path widening	Implemented View the order on our *TTRO page*
Bell Hill, Histon	One-way system with no entry from Park Lane with space used for pedestrians and cyclists	Implemented View the order on our *ETRO page*
Winders Lane, Histon	One Way system with no entry from Clay Street	

The Greater Cambridge Partnership is undertaking a number of schemes in Cambridge.

Area	*Measure*	**Date measures installed**	*Information*
Silver Street	Extend the bus gate restriction to operate 24 hours a day, 7 days a week	24 August 2020	*ETRO Leaflet*
Luard Road	Prohibit the driving of motor vehicles on a short section west of the Luard Close junction to prevent through traffic movements	24 August 2020	*ETRO Leaflet*
Storey's Way	Prohibit the driving of motor vehicles at the existing 2 metre width restriction point to prevent through traffic movements The existing 2 metre width restriction will be suspended.	25 August 2020	*ETRO Leaflet*
Newtown Area - Bateman Street	*Phase 1 measures:* Prohibit the driving of motor vehicles on a short section of Bateman Street, just west of the Panton Street junction to prevent through traffic movements in the area.	25 August 2020	*ETRO Leaflet*
Newtown Area - Coronation Street	*Phase 1 measures:* Prohibit the driving of motor vehicles on a short section of Coronation Street, just west of the Panton Street junction to prevent through traffic movements in the area:	26 August 2020	*ETRO Leaflet*

Newtown Area - Pemberton Terrace	*Phase 1 measures:* Prohibit the driving of motor vehicles on a short section of Pemberton Terrace, just west of its junction with Panton Street to prevent through traffic movements in the area:	26 August 2020	*ETRO Leaflet*
Newtown Area - Coronation Street	*Phase 1 measures:* The one-way flow between St. Eligius Street and Panton Street will be suspended	26 August 2020	*ETRO Leaflet*
Newtown Area - Panton Street	*Phase 2 measures* Prohibit the driving of motor vehicles on a short section of Panton Street, mid-way between Saxon Street and Union Road to prevent through traffic movements in the area:	20 January 2021	*Newtown Phase 2 leaflet*
Newtown Area - Panton Street	*Phase 2 measures* Two way traffic flow in Panton Street between Union Road and Saxon Street (either side of the prohibition of driving measure above) Cyclists allowed to use Panton Street in both directions on the sections between Lensfield Road and Saxon Street and between Union Road and Russell Court with motor vehicles one-way only (northbound)	20 January 2021	*Newtown Phase 2 leaflet*
Newtown Area - Norwich Street	*Phase 2 measures* The one-way flow in Norwich Street will be reversed to flow from Panton Street to Hills Road	20 January 2021	*Newtown Phase 2 leaflet*

Nightingale Avenue	Prohibit the driving of motor vehicles on a short section immediately adjacent to its junction with Hills Road to prevent through traffic movements	28 August 2020	*ETRO Leaflet*
Carlyle Road, Cambridge	Prohibit the driving of motor vehicles on a short section between Holland Street and Grasmere Gardens to prevent through traffic movements	27 August 2020	*ETRO Leaflet*

Challenges and Constraints Imposed by COVID-19 upon LAQM within Cambridge

No specific challenges or constraints relating to LAQM have arisen during 2020 because of COVID-19, as defined by Table F1 Impact Matrix, within Cambridge City Council. However, workloads were impacted as staff and contractors were absent from work due to illness, shielding or self-isolating. Cambridge City Council prioritised maintenance of the air quality monitoring programme over other project-based work. Development of new COVID-secure working practices also led to a range of non-quantifiable impacts.

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.