



2019 Air Quality Annual Status Report (ASR)

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

June 2019



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Executive Summary: Air Quality in Our Area

Air Quality in Cambridge

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 an 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 (NO₂) continue to be high. The main source of nitrogen dioxide in Cambridge is from vehicle emissions, so the Air Quality Action Plan focuses on ways to reduce these emissions, as well as reducing other sources of air pollution. There are also legal limits for small particles, known as PM₁₀¹. The levels of PM₁₀ in Cambridge are below the legal limits.

Air Quality in 2018

The trends noted from the recorded levels of air pollution in 2018 indicate that levels of nitrogen dioxide in 2018 were, overall, slightly lower than in 2017. This is in agreement with the national trend².

On the other hand, recorded levels of particulate matter in 2018 have risen slightly (PM₁₀) or remained the same (PM_{2.5}). This is in contrast to the national trend which has recorded stable concentrations of PM₁₀ and PM_{2.5} from 2015 to 2018.

Why do we need to improve air quality?

Air pollution causes diseases of the heart and lungs, contributes to poor public health and shortens life. Children and older people are particularly affected. Air pollution

¹ PM₁₀ denotes particulate matter of diameter less than or equal to 10 micrometers (microns)

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/796887/Air_Quality_Statistics_in_the_UK_1987_to_2018.pdf

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.

Public Health data attributed 257 deaths in Cambridgeshire in 2010³ to Particulate Air Pollution, compared with 34 from Road Traffic Accidents⁴. These data indicated that 47 deaths in Cambridge could be attributed to Particulate Air Pollution.

Actions to Improve Air Quality

Cambridge City Council is the local authority with the legal responsibility to improve air quality in Cambridge city. Cambridgeshire County Council has been responsible for traffic management, highways, public transport and improving public health and so has had a legal responsibility to be involved in making air quality improvements. Both councils have worked together for more than 10 years to bring in measures to improve the city's air quality. The relatively newly formed Combined Authority for Cambridgeshire and Peterborough has adopted some of the responsibilities for highways, traffic and public transport.

We developed a new Air Quality Action Plan in 2017 with the County Council (Public Health and Transport teams) and the Greater Cambridge Partnership (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 on March 13th, 2018. This plan sets out the council's priorities, in 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:

³ This is the latest data available.

⁴ Public Health England (2014) Estimating Local Mortality Burdens associated with Particulate Air Pollution./ <https://www.gov.uk/government/publications/estimating-local-mortality-burdens-associated-with-particulate-air-pollution>

- 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.

Actions completed in 2018 include:

- New policies and incentives requiring a shift to ultra-low and zero emission taxis were unanimously approved at Licencing Committee in March 2018⁵. There has been a big increase in the number of electric and hybrid taxis licensed by Cambridge City Council as a result. Cambridge City Council currently licences 26 EV taxis compared with 2 this time last year.
- The first six rapid charge points for taxis have been installed at Adam and Eve Car Park, Arbury Court Car Park and on street at Newmarket Road.
- The results of the Clean Air Zone Feasibility Study were included as part of the 'Choices for Better Journeys engagement activity undertaken in March 2019. The results of the engagement activity will be put to the GCP Executive Board in summer 2019 with options to take forward for further work and consideration, which may include a type of Clean Air Zone.
- Work on other actions in the Plan have been started; these are discussed in the text below.

⁵ [Committee report](https://democracy.cambridge.gov.uk/ieListDocuments.aspx?CId=180&MId=3300&Ver=4)
<https://democracy.cambridge.gov.uk/ieListDocuments.aspx?CId=180&MId=3300&Ver=4>

Conclusions and Priorities

The trends noted from the recorded levels of air pollution in 2018 indicate that levels of nitrogen dioxide are, overall, continuing to fall slowly. Measured levels of particulate matter have risen slightly (PM₁₀) or remained the same (PM_{2.5}).

No changes to the Air Quality Management Area are proposed at this time.

Priorities

- Priority - Our key priority in 2019 is to continue with the measures already underway and start work on new measures in accordance with our Air Quality Action Plan
- Challenge - Future improvements in air quality are dependent on supporting the switch from internal combustion engine use 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 take advantage of any opportunities to apply for grants to fund 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 GCP and start to work with the Combined Authority to support strategic transport planning and infrastructure investment.
- Action – County Council elected members have noted the impacts of poor air quality and have passed a resolution to work with its partner councils and other public bodies towards promoting a programme of active participation across Cambridgeshire to address air pollution more collaboratively, including the development of communication resources, training and learning events, guidance for communities on air quality monitoring, and collaborative working.

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 stations⁶; Cambridgeshire County Council includes air quality information on its Cambridgeshire Insight information website⁷. Cambridge City Council also gets involved with Clean Air Day.

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 need to reach a very high temperature to work efficiently; on short trips it won't reach that temperature.
- Try using public transport, cycling or walking more often.
- Information on [public transport](#) around Cambridge can be found on the Cambridgeshire County Council website.
- My [Bus Trip](#) is a useful app for real-time bus information.
- [MotionMap](#) is a new journey-planning app for travel by bus, train, walking and cycling; it's available from app stores.
- Walking and cycling help you to stay healthy plus save you money in fuel costs. There is a lot of information on walking and cycling around Cambridge on the City Council [website](#) or via the [Walkit](#) website.
- 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](#).

⁶ <https://www.cambridge.gov.uk/air-pollution>

⁷ <https://cambridgeshireinsight.org.uk/environment/airquality/>

- 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 - There is a growing market for [electric vehicles](#). There are charging points at some of our car parks and plans are underway to introduce more to meet demand.
- Consider living car free.
- Join a car club. [Zipcar](#) have 20 vehicles for short term use in Cambridge.
- Consider working at home occasionally or car sharing.
- Use less energy at home – wood, coal, oil and gas burning all contribute to air pollution.
- Make your children aware of the impact that day to day activities have on air quality. The [Kidz 4 Clean Air](#) website has puzzles, games and information about air quality for children.

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: egg@cambridge.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality in Cambridge during 2018. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Cambridge City Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives. A summary of AQMAs declared by Cambridge can be found in Table 2.1 and a map Figure 2.1. A high resolution map is available on our website⁸. [Further information](#) related to declared or revoked AQMAs, including maps of AQMA boundaries are available online.

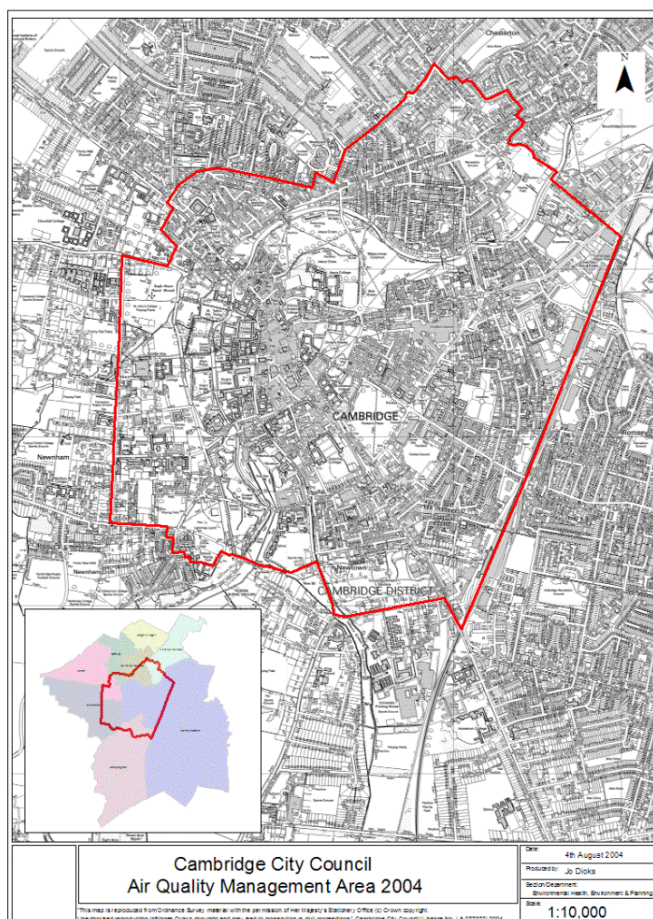


Figure 2.1 Cambridge Air Quality Management Area

⁸ <https://www.cambridge.gov.uk/media/3450/air-quality-management-area-map.pdf>

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration 2004	Now 2018	
Cambridge	2004	Annual Mean Nitrogen Dioxide	Cambridge	An area encompassing the inner ring road and all the land within it (including a buffer zone around the ring road and its junctions with main feeder roads).	NO	49 micrograms per cubic metre continuous monitor in Parker Street 59 micrograms per cubic metre diffusion tube in Emmanuel Street	32 micrograms per cubic metre continuous monitor in Parker Street 36 micrograms per cubic metre diffusion tube in Emmanuel Street 37 micrograms per cubic metre diffusion tube in Long Road (monitoring site not in place in 2004)	Cambridge Air Quality Action Plan, 2018 – 2023

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

Defra appraisal of 2017 Annual Status Report

Defra's appraisal of last year's ASR concluded the report was well structured and provided the information specified. Comments about labelling of maps and reviewing the monitoring strategy have been addressed in the relevant sections of this report (Chapter 3).

This report does include a progress report version of Table 2.2, as well as discussion in the text, where appropriate. Table 2.2 contains 4 categories of measure:

1. Completed
2. Active and funded/Being progressed – with dates for planning, implementation and completion.
3. On hold – waiting for funding.
4. Ongoing routine actions

Aspirational actions (where no further progress likely within the lifetime of the Plan) have been de-listed, following the instruction in the Defra appraisal.

Defra also noted that pollution levels are below the National Air Quality Objectives at relevant receptors but there remains a potential for pollution levels to approach objective levels with increased development-related traffic in the region. They also noted, from previous reports, that bus emissions are likely to play a significant role for the future compliance with air quality objectives, particularly in areas close to the city centre.

Developments in relation to the Greater Cambridge Partnership (GCP), the Strategic Bus Review, and development of a baseline modelling study to consider wider impacts of proposed schemes within the Local Transport Plan were noted. A coordinated regional approach to developing appropriate measures for developing low emission sustainable transport across the region was welcomed.

Some significant uncertainties in key areas were highlighted:

- The impact of future plans for regional growth on local transport and infrastructure
- Whether current pollution levels within Cambridge City are likely to remain within objective levels, if the full extent of proposed regional growth takes place

Defra commented that, on this basis, the degree of further interventions to maintain air quality within objective levels should benefit from the modelling proposed for the GCP, and the outcome of the feasibility study for a Clean Air Zone.

With the range of possible options and future proposals currently under consideration, it will be particularly important that the future traffic management options are subject to detailed emissions and air quality assessment as part of the process of scenario testing. Without this level of assessment, it will not be possible to provide a detailed list of measures that can be prioritised within the action plan, on the basis of potential to provide cost-effective emissions reductions.

Cambridge City Council is not yet able to make cost-benefit comparisons of the measures to assess their relative effectiveness, because we do not yet have this information. This work will be carried out when further information is available.

Progress in 2018

Cambridge City Council, Cambridgeshire County Council and the GCP have taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2 below. More detail on these measures can be found in the Air Quality Action Plan⁹. Key completed measures are:

Air Quality Action Plan completed in 2017 and adopted by Environment Scrutiny Committee in March 2018, following consultation with statutory consultees including

⁹ <https://www.cambridge.gov.uk/media/3451/air-quality-action-plan-2018.pdf>

Defra. A further public consultation was carried out over the summer of 2018.
<p>The taxi licensing policy was prepared in 2017 (and adopted by the Licensing Committee in March 2018). The new policy offers fee discounts or exemptions for ultra-low and zero emission taxis and has extended the age limit for ultra-low and zero emission taxis. All newly registered taxis (saloon vehicle type only) are to be low or ultra-low emission by 2020. All taxis licenced by Cambridge City Council will be ultra-low or zero emission by 2028.</p> <p>An additional measure was introduced to allow up to 50 of the large, van-type, wheelchair accessible taxis to be replaced by a zero emission saloon vehicle.</p> <p>There are currently 26 electric taxis and 54 hybrid taxis licensed by Cambridge City Council, out of a total of 455 (March 2019).</p>
<p>The Feasibility Study for a Clean Air Zone was completed in the autumn and the results are being considered by the GCP. The results of the Clean Air Zone Feasibility Study were included as part of the 'Choices for Better Journeys' engagement activity undertaken in March 2019. The results of the engagement activity will be put to the GCP Executive Board in summer 2019 with options to take forward for further work and consideration, which may include a type of Clean Air Zone.</p>
<p>The public consultation on the Cambridge Air Quality Action Plan 2018-23 was carried out over an extended period during the summer of 2018. The consultation report is appended to the AQAP update. There have not been any substantial changes as a result of the consultation process.</p>
<p>The Local Plan was approved by the Planning Inspector in the autumn of 2018; it includes policies on air quality, parking and sustainable transport. Work on a Supplementary Planning Document began in 2018.</p>
<p>Work continued on the installation of OLEV-funded rapid charge points for taxis, with the first installation completed in June 2018. The OLEV funded project runs for 3 years until 2019/20. Six Rapid Charge Points for Taxis have been installed and sites are being finalised for the remaining charge points.</p>

Progress on these measures was assisted by the appointment of 2 full-time temporary posts within the City Council to work on the GCP funded projects; these posts are funded until June 2019.

The following measures are expected to be completed over the course of the next reporting year (2019/20):

A Supplementary Planning Document on Sustainable Design & Construction is in preparation, will be consulted on in the summer of 2019 and taken to relevant committees for adoption in the autumn. This includes a section on air quality and development control. The SPD is joint with South Cambridgeshire District Council; the air quality sections are different in this document, but it is planned that they will be the same or similar in future versions.

Ensure that air quality is an integral part of the new Local Transport Plan and engage with CPCA to ensure that the transport authority considers air quality in its plans and contributes measures to improve air quality to the Air Quality Action Plan. The air quality team has been in discussion with the consultants preparing the new LTP. The new LTP is planned for publication and consultation over the summer, and adoption in the autumn.

Complete the first phase of installation of rapid charge points for taxis.

An air quality baseline study of the Greater Cambridge area to allow the modelling of the proposed GCP interventions to assess their impact on air quality will be completed in the summer 2019. The results of these modelling exercises will be used by the GCP when considering decisions to be made on proposed interventions.

The first rapid charge points for taxis were installed and operational in June 2018. There are currently 6 in operation. The data provided by Swarco records that 1,597 charging sessions were taken up in 2018/19, with increases each quarter as would be expected at this stage of the project.

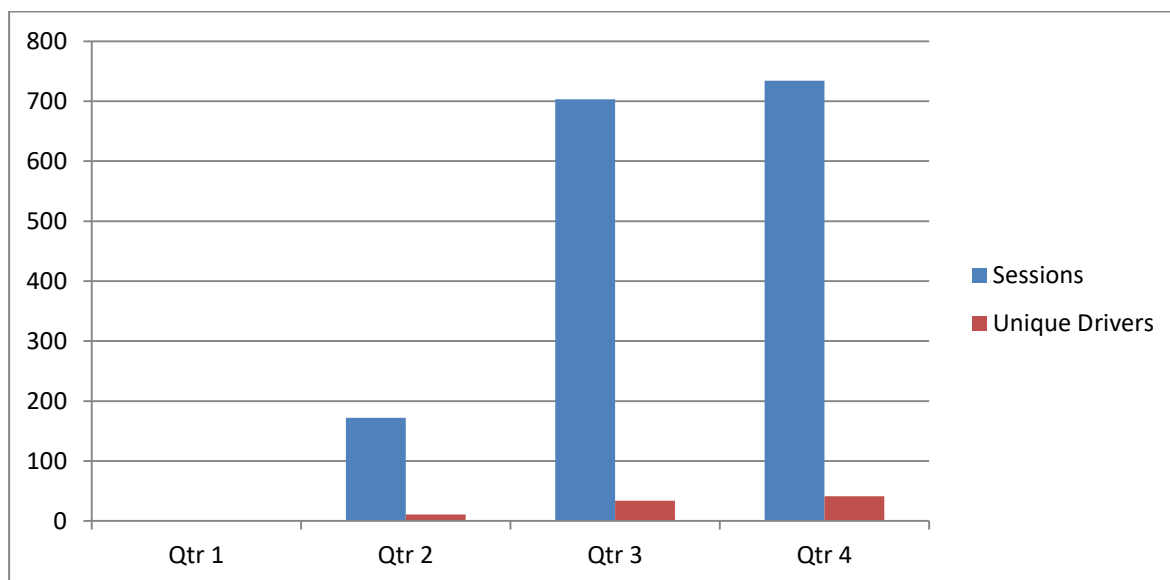
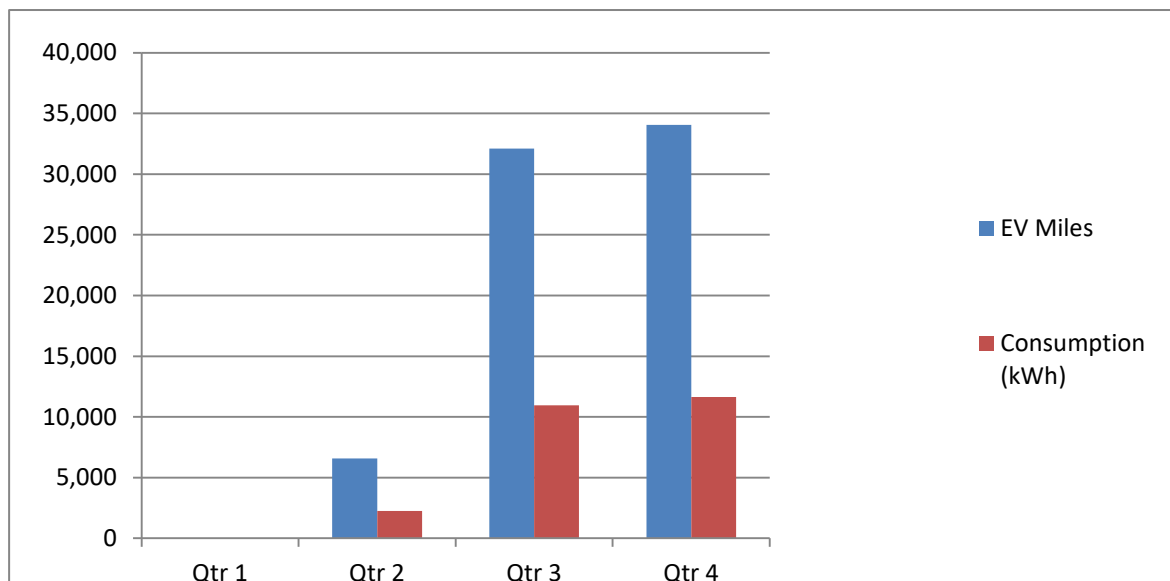


Figure 2.2 Quarterly increases during the last 12 months

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 will be essential to reduce the emissions in central Cambridge. If approved by the GCP board, work on a full business case for a CAZ will be developed by January 2020.
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.
Continue to work with the GCP and the Combined Authority on all projects that will improve air quality, including the Cambridge Area Metro (CAM) and Cambridge South railway station.
Continue with the installation of rapid charge points for taxis, completing the first phase and starting the second phase of installations.
Develop an EV charging infrastructure strategy for Cambridge and the Combined Authority Area. The first phase of this new action is to prepare an Electric Vehicle and Infrastructure Strategy Brief for Cambridge City Council's Environment Policy Group. The Brief will set out the current provision for EV charging in Cambridge and the wider region, identify where provision needs to be better, how this would be achieved and who would be responsible. A comprehensive and over-arching strategy would involve local authority departments such as environmental health, development and strategic planning, fleet management, parking, transport managers, highways, as well as local companies and the DNO. Liaison with OLEV, EV infrastructure and transport companies will be required. The Brief is scheduled for approval in September 2019. It will set out the ambition for a significant improvement in provision for EV charging, identifying priority areas and workstreams.
Complete the Air Quality section of the SPD and work with planning officers through the consultation, publicity and adoption phases.
Continue the work to ensure that air quality is an integral part of the new Local

Transport Plan as well as other Combined Authority transport and planning related work streams.
Revisit the work carried out to improve the quality of the buses in Cambridge, as the bus fleet is getting older rather than newer, as was agreed in the QBP. Public transport is the responsibility of the Combined Authority, which has recently carried out a Strategic Bus Review and is considering the next steps.
Continue to work with Public Health officers to raise awareness about the health impacts of poor air quality, including further air quality training events.
On-street charging projects. As well as a trial of an on-street EV charging post in one of the residential parking zones of Cambridge, discussions are taking place with Balfour Beatty around lamppost charging (BB have the contract to provide street lighting in Cambridgeshire). A trial is planned for 2019.
Continue to publicise ways to improve air quality.
Start to develop new Air Quality Planning policies for the joint Local Plan. Ensure that requirements for Health Impact Assessments are included.
Consult on extension of the Smoke Control Areas to cover the whole district.
Take advantage of any new funding opportunities that arise.

Progress on the following measures has been slower than expected.

The new Cambridgeshire and Peterborough Combined Authority 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.

New A428 Cambourne – Cambridge Busway project¹⁰ was paused in 2018 for a review by the Combined Authority. In October 2018, the Authority review concluded that GCP's work to recommend a preferred, off-road route is robust and identified the optimal solution for the Cambourne to Cambridge corridor, as best delivering project objectives and aligning with future CAM proposals. Phase 1 route assessment will continue in 2019, taking into account feedback from stakeholders including residents, landowners and businesses. A single, end-to-end link will be presented to the GCP Executive Board as part of an Outline Business Case for decision in autumn 2019. The dedicated route includes a new route, bypassing other road traffic, with regular, 'turn up and go' services operating to high service standards, provision for walking and cycling and a new Park & Ride site off the A428/A1303 is also included. The scheme is planned for completion in 2024.

Park & Ride projects were paused as above, and in particular the new P&R site(s) related to the A428 Cambourne – Cambridge Busway. A plan to develop the business case for a 2,000 space P&R by Junction 11 of the A10/M11 interchange to the southwest of Cambridge was approved in 2018. This P&R would serve the expanding Cambridge Biomedical Campus and Addenbrooke's hospital as well as new developments to the south west of Cambridge. Some additional spaces have been brought in at Trumpington P&R site.

All measures relating to public transport, including those to reduce emissions from buses and coaches were paused in 2018 for the Combined Authority carried out a Strategic Bus Review¹¹ of commercial, subsidised and community services.

The study was intended to provide a high-level strategic review of current bus service provision across the Combined Authority area and provide a menu of potential

¹⁰ Link to Cambridge to Cambourne webpage <https://www.greatercambridge.org.uk/transport/transport-projects/cambourne-to-cambridge/>

¹¹ [Link to Strategic Bus Review webpage http://cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/Strategic-Bus-Review.pdf](http://cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/Strategic-Bus-Review.pdf)

options for improving the service in the medium and long term. A key aim of the study was to recognise and understand the wider economic and social benefits of an effective bus service against a range of operating models. It identified a series of recommendations to improve the bus services in the region; in 2019 preparations will begin to develop and deliver a business case that will assess the benefits of the alternative operational models. This business case will be completed by Spring 2021.

Reducing emissions from buses (a priority measure) has not progressed. Indeed, calculated emissions from buses increased by 5% (NO_x) and 15% (PM) in 2018 as older E3 buses were re-introduced on some services. The data from diffusion tubes in the area around the bus station shows that air pollution levels have risen slightly in this area, contrary to the overall trend in Cambridge and suggests that higher emission buses are contributing to an overall increase in pollution in this area (Section 3). The E3 buses are scheduled for replacement in September 2019, so air lower pollution levels may be recorded in 2019 if these buses are not in service during the winter months; otherwise an improvement should be recorded in 2020. Meanwhile, 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 – the trial will be one full electric bus and one electric hybrid - that will operate on electric only in areas with elevated pollutant concentrations. GCP intend to provide payment of the cost difference between a new diesel bus to each low emission variant, estimated to be up to £400K.

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 (which could provide wider coverage more effectively).

Installation of EV Charge Points for residents and non-residents, in car parks. A procurement is underway to provide Charge Points in City car parks for the public; this will be completed by the end of the financial year.

Options for reducing emissions from HGV are limited by funding resources and logistical challenges.

New Measures

CAM (Cambridge metro)

The Cambridge Autonomous Metro (CAM)¹² was being discussed at a high level when the AQAP was being prepared. Detailed plans have come forward during 2018, so it is now appropriate to include it as a new AQAP measure. It forms a key component of the Combined Authority's vision for the Cambridgeshire and Peterborough economy. It aims to unlock growth across the region through the provision of high quality and high frequency metro services, addressing severe housing and congestion pressures within the city of Cambridge. Following the development of a Strategic Outline Business Case for the CAM in 2018, Combined Authority will start work on an Outline Business Case and collaborating with central and local government partners to establish the funding model required for delivery.

The nature of the CAM proposal means that it would be delivered in phases and it has the potential to deliver benefits earlier due to work already underway on the Cambourne to Cambridge and the Cambridge South East corridor as well as additional segregated, high-quality public transport corridors. The proposal will align with additional P&R provision. Early elements of the CAM system could be operational by 2021.

Cambridge South railway station

The delivery of an interim train station at Cambridge South, ahead of the development of a permanent north-south and east-west route solution, builds on the key recommendations for rapid infrastructure responses to be introduced where need is most pressing. As Cambridge's biomedical campus continues to flourish, the case for this intervention has received national attention. In 2019, the Combined Authority will work with the Department for Transport to address challenges surrounding delivery, timetabling and operations, as well as integrating the emerging proposals for the first phase of station development with the permanent solution. This project is

¹² <http://cambridgeshirepeterborough-ca.gov.uk/assets/Combined-Authority/Item-2.1-Additional-report-Greater-Cambridge-mass-transit-options-assessment-report-January-2018.pdf>

in the early discussion and planning phase and is planned to be underway during the lifetime of this AQAP.

Strategic Bus Review

The Combined Authority of Cambridgeshire and Peterborough (CACP) commissioned a Strategic Bus Review in 2018. The review covered current bus provision, strategic options for bus services of the future, different operational models and transition arrangements. A Bus Reform Task Force was set up in January 2019; a business case for alternative operational models by spring 2021 in consultation with stakeholders such as local councils, businesses, service users and operators is expected.

Challenges

The principal challenge that Cambridge anticipates facing is growth in Cambridge 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 (75,000m²).

The increases in population and business growth will result in an increased demand for travel to/ from 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). 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.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Expansion of Park & Ride services	Alternatives to private vehicle use	Bus based Park & Ride	Camb. County Council/ Greater Cambridge Partnership/ CACP	Ongoing	Ongoing	TBC	n/a	5 P&R sites	Ongoing	Ongoing Routine More P&R due under Greater Cambridge Partnership arrangements including M11 area provision https://www.greatercambridge.org.uk/transport/transport-projects/cambridgesouthwestparkandride/
2	Quality Bus Partnerships	Alternatives to private vehicle use	Other	Camb. County Council/ Camb City Council/ CACP	On hold	On hold.	QBP agreement for current services and all new services	No additional pollution from additional bus services.	No QBP agreement for regular services in place	On hold	On hold Bus companies waiting for outcome of CA bus services review before making any further commitment.
3	Camshare is one strand of the Travel for Cambridge-shire scheme	Alternatives to private vehicle use	Car and lift sharing schemes	TfC, Camb. County Council	In place	In place	n/a	n/a	5,000 members	Active. Ongoing	Ongoing Routine http://www.travelcambs.org.uk/car-share/

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4	Provision of car park places for car club vehicles	Alternatives to private vehicle use	Car Clubs	Parking Services, Camb. City Council	In place	In place, but improvements planned	n/a	n/a	16 cars and 1 van in Zipcar club across Cambridge	Summer 2019	Being Progressed Cambridge City Council and Cambridgeshire County Council are currently procuring a car club operator to operate a car club from the car club spaces provided in Cambridge City Council Car parks and the Cambridgeshire County Council on-street spaces in Cambridge. We also plan to expand the existing car club spaces provision
5	Provision of on-street car parking places for car club vehicles	Alternatives to private vehicle use	Car Clubs	Infrastructure Team, Camb. County Council	In place	In place, but improvements planned	n/a	n/a	16 cars and 1 van in Zipcar club across Cambridge	Summer 2019	As above.
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	Environmental Health/ Planning Camb. City Council/ district councils	n/a	Ongoing	n/a	n/a	Not recorded.	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD. Forward-thinking developers were already setting aside car club spaces.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
7	Require 1 car club vehicle per 500 parking spaces in new residential development, 1 vehicle per 10,000 m2 in non-residential developments	Alternatives to private vehicle use	Car Clubs	Environmental Health/ Planning Camb. City Council/ district councils	n/a	Ongoing	n/a	n/a	Not recorded.	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD. Forward-thinking developers were already setting aside car club spaces. .
8	Promotion of electric bike hire/hub schemes	Alternatives to private vehicle use	Other	Environmental Health/ Planning Camb. City Council/ district councils GCP	n/a	n/a	n/a	n/a	Not recorded.	Ongoing	On hold. Forward-thinking developers are already proposing e-bike hubs on large developments as sustainable transport mode offer to mitigate air pollution impact.
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	Environmental Health and Planning, Camb. City Council/ district councils	n/a	n/a	n/a	n/a	n/a	n/a	On hold Will need to complement existing cycle parking requirements and space implications. Will need to consider if access is open or restricted.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
10	Develop policies to promote electric bike charge facilities in workplaces and car parks/ require in new workplaces	Alternatives to private vehicle use	Other	Environmental Health and Planning, Camb. City Council/ district councils	n/a	n/a	n/a	n/a	n/a	n/a	On hold Will need to complement existing cycle parking requirements and space implications. Will need to consider if access is open or restricted.
17	Last Mile delivery based from P&R sites	Freight and Delivery Management	Delivery and service plans	GCP/ Camb. County Council	Under discussion	n/a	n/a	n/a	n/a	n/a	On hold Last Mile deliveries using electric car/taxi and/or bikes
18	Click and Collect hubs at P&R sites	Freight and Delivery Management	Freight Consolidation Centre	GCP/ Camb. County Council	Under discussion	n/a	n/a	n/a	n/a	n/a	On hold Useful for commuters
19	Unified Consolidation Centres	Freight and Delivery Management	Freight partnerships for city centre deliveries	GCP/ Camb. County Council	Under discussion	n/a	n/a	n/a	n/a	n/a	On hold Initial phase of discussion
20	City Centre restrictions	Freight and Delivery Management	Quiet and Out of Hours delivery	GCP/ Camb. County Council	In place	In place	n/a	n/a	Complete	Ongoing	Completed HGV not permitted in Cambridge Core Area 10 – 4 Further restrictions are being discussed

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
22	Cycle Delivery services	Freight and Delivery Management	Other	Camb. County Council	In place	In place	n/a	n/a	Complete GCP considering further incentives for cycle deliveries	Ongoing	Completed Zedify (Cambridge) use specialist cargo-bikes and Electric vehicles. Cycle deliveries are used for home-delivery of take-away food. These services are commercially viable.
23	Air Quality Policy in Joint Local Plan	Policy Guidance and Development Control	Regional planning – Area-wide strategies	Environmental Health/ Planning Joint team City/SCDC	Ideas to be considered during 2019	Implementation start upon Local Plan adoption	Air Quality policies in joint Local Plan	n/a	Discussion phase	TBC	Being Progressed A joint Plan will be prepared following merger of planning teams, and policies will be aligned.
24	Air Quality Policy in Local Plan	Policy Guidance and Development Control	Other Policy	Environmental Health/ Planning Camb. City Council	In place	Local Plan adopted so in place from 2018	n/a	n/a	In use	Ongoing	Completed City and SCDC have separate Local Plans
25	Adopt/ revise a Low Emissions Strategy	Policy Guidance and Development Control	Low Emissions Strategy	Environmental Health/ Planning Joint team City/SCDC	2018	2020	Completion of new LES	-	To be discussed in 2019	TBC	On hold SCDC have a Low Emissions Strategy in place. City Council could adopt similar LES or work with SCDC on joint guidance. May be complemented by 'Clean Air Zone'

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
26	Supplementary Planning Documents	Policy Guidance and Development Control	Air quality Planning and Policy Guidance	Environmental Health/ Planning Joint team City/SCDC	2017	2019 onwards	Completion of Sustainable Construction and Development SPD	n/a	Draft completed City and SCDC committees to approve Consultation in summer 2019	2019	Completed. Update of the 2007 Sustainable Design and Construction SPD to provide guidance for policies contained in the emerging Local Plan
27	Air Quality and Planning guidance document	Policy Guidance and Development Control	Air quality Planning and Policy Guidance	Environmental Health/ Planning Joint team City/SCDC	2018	2019 onwards	Update of Air Quality in Cambridge: Developers Guide	n/a	Not yet started	2019	Being Progressed. Most detail and links to further information is in the SPD. Updates will be provided on the website.
28	Develop guidance based on Defra cost-benefit approach to mitigation	Policy Guidance and Development Control	Air quality Planning and Policy Guidance	Environmental Health/ Planning Joint team City/SCDC	2017	2019 onwards	Production of new guidance to support Policy 36	n/a	Under discussion	2019	On hold. To provide a clear and simple procedure to ensure that all new developments are adequately mitigated.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
29	Sustainable Procurement Guidance.	Policy Guidance and Development Control	Sustainable Procurement Guidance	District councils City/SCDC	In place	In place	n/a	n/a	Complete	Ongoing	Complete Cambs City procurement team have produced a guide for employees "Buying Green in Cambridge City Council", which covers sustainable issues.
30	Develop policies to require Health Impact Assessments (HIA) at Pre-application stage	Policy Guidance and Development Control	Other	Planning and Public Health Districts/ Camb. County Council	In discussion	For the joint Local Plan/future planning policy	n/a	n/a	n/a	TBC	On hold To ensure that Healthy Communities are part of the design, not an optional add-on
31	Air Quality input into Joint Strategic Needs Assessments for Transport and for Built Environment	Policy Guidance and Development Control	Other	Public Health/Environmental Health Districts/ Camb. County Council	In place	Ongoing	n/a	n/a	n/a	Ongoing	Complete To ensure that Healthy Community strategies are embedded into the JSNA.
32	Public Health to be consulted on preparation of SPDs	Policy Guidance and Development Control	Other	Districts/ Camb. County Council	In discussion	For the joint Local Plan	n/a	n/a	In place	Ongoing	On hold To ensure that positive health policies are enshrined in SPDs

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
33a	Require a site wide EV charging strategy for all large-scale Major sites	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed 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 Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.
34a	Require a minimum of one slow EV Charge Point for two dwelling with communal parking (50% coverage)	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
34b	Require a minimum of one slow EV Charge Point for every two parking spaces in non-residential developments (50% coverage)	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.
35a	Require one fast EV Charge Point for 1,000m ² non-residential floor space	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.
35b	Require one rapid EV Charge Point for 1,000m ² non-residential floor space	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.
35c	Require at least one rapid EV charge point for large-scale Major developments	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
36a	Any new or replacement car park to have EV charging points	Policy Guidance and Development Control	Other	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed 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	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed 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	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Completed Planning requirement in AQAP v2 and included in SPD.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
37	CHP emission standards	Promoting Low Emission Plant	Emission control equipment for small and medium stationary combustion plant	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Complete 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
38	Low NOx boilers	Promoting Low Emission Plant	Emission control equipment for small and medium stationary combustion plant	Cambridge City Environmental Health/ Planning	In place	Ongoing	n/a	Will reduce impact of additional development	In place	Ongoing	Complete 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	Camb City Council	Under discussion	n/a	n/a	n/a	n/a	n/a	Being Progressed Defra AQG funding won to undertake consultation into a City wide SCA. Additionally the consultation should increase awareness of emissions associated with domestic burning.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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	Camb City Council	n/a	n/a	n/a	n/a	n/a	n/a	Complete Regulations already in place to cover fuel use and smoke nuisance
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	Camb City Council	n/a	n/a	n/a	n/a	n/a	n/a	Complete An alternative to low NOx boilers suggested in the Sustainable Design and Construction PD
46	"Clean Air Zone"	Promoting low emission transport	Low Emission Zone	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	In discussion phase	Following consultation and agreement on final area and permissions to enter.	CAZ in place	TBC	Feasibility study completed November 2018	2021	Being progressed Formal proposals to be presented to GCP Board by December 2019 This Measure is the one that has potential for the greatest improvement in air quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
47	LEV discount offered as part of policy for residents parking permits	Promoting low emission transport	LEV priority parking	Cambs County Council	n/a	2018	Discount offered on residents parking permits to Low Emission Vehicles	n/a	In place	ongoing	Complete. 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 infrastructure	Camb City Council/ South Cambs DC/ Camb County Council/ Greater Cambridge Partnership	2017	2018 onwards	Installation of 18 Rapid and 3 Fast EV chargepoints in Cambridge and South Cambridgeshire	1.5 – 4.5% reduction in NOx emissions	8 Rapid chargers installed by March 2019	2020	Active and Funded. Funding from OLEV, Greater Cambridge Partnership, Cambridge City Council
49	Installation of EV charge points for residents	Promoting low emission transport	Alternative refuelling infrastructure	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	2017	2018	Installation of 16 EV chargepoints in residential parking zones	n/a	Trial about to start in summer 2019	2019	Being Progressed Also considering EV charging from lampposts, in agreement with lamppost owners (PFI with Balfour Beatty). Atrial is planned for 2019.
50	Installation of EV charge points for non-residents	Promoting low emission transport	Alternative refuelling infrastructure	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	n/a	n/a	n/a	n/a	n/a	n/a	Being Progressed Some EV already in car parks. Work under way for more provision in City Car parks. Park Street car park redevelopment has plans for significant charger provision

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
51	Installation of EV charge points on lampposts, for residents and non-residents	Promoting low emission transport	Alternative refuelling infrastructure	Camb City Council/ Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	n/a	n/a	n/a	n/a	Being progressed, as above Part of overall strategy to enable EV uptake
53	Procuring low emission vehicles for own fleet where possible	Promoting low emission transport	Public vehicle procurement	Camb. City Council and shared services	In place	Ongoing	n/a	n/a	Ongoing	Ongoing	On hold 10 vans and 2 cars on fleet, around 10%. Replacement with low emission versions of larger vehicles will come forwards when cost difference is closer.
54	Fee reduction for low emission taxis	Promoting low emission transport	Taxi emission incentives	Camb. City Council	2016	2018	Minimum of 9 HCV and 5 PHV per annum per annum from 2018/19	1.5 – 4.5% reduction in NOx emissions	Due 2018	Complete	Complete 26 vehicles have benefitted from the discount
55	Licensing conditions to require low emission taxis	Promoting low emission transport	Taxi Licensing conditions	Camb. City Council	2016	From 2018	Minimum of 9 HCV and 5 PHV per annum from 2018/19	1.5 – 4.5% reduction in NOx emissions	26 EV and 53 petrol hybrid out of a fleet of 455	Complete	Complete A big shift from 2017 fleet - 2 EV and 30 petrol hybrid taxis

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
56a	Lowering emissions from public service vehicles (buses and coaches)	Promoting low emission transport	Other	Camb City Council/ Camb. County Council/ Greater Cambridge Partnership	Ongoing	Ongoing	100% buses E6 or better No increase in emissions from additional services	Could be significant	36% bus journey kilometres E6 in Cambridge Core Area, but more older buses on the general fleet (5% E3)	TBC, no mechanism in place to require improvements, CAZ may be the most effective tool	Being progressed EV buses being considered, GCP will co-fund a trial with Stagecoach for one electric bus and one hybrid later in 2019.
56b	EV Charging Strategy	Promoting low emission transport	Other	Camb City Council/ Camb. County Council/ Greater Cambridge Partnership/ CACAP	In early planning stage	Planned for 2020	TBC	n/a	n/a	TBC	Environmental Health team preparing position statement as first phase of strategic planning; it sets out current status, responsibilities, future ambitions. Initially for city, but to incorporate Combined Authority area in future
57	Home-working policies	Promoting Travel Alternatives	Encourage and facilitate home working	TfC Camb County Council Camb City Council	Ongoing	Ongoing	n/a	n/a	In place	ongoing	Ongoing Routine To reduce the need to travel to work

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
58	Active Travel Infrastructure via GCP measures	Promoting Travel Alternatives	Intensive Active Travel campaign and infrastructure	TfC Camb County Council Greater Cambridge Partnership	Not at present	n/a	n/a	n/a	n/a	n/a	On hold Nothing specific in place at the moment, but many GCP measures will improve access to Active Travel
59	Travel for Cambridge-shire	Promoting Travel Alternatives	Personalised Travel Planning	Camb County Council	Ongoing	Ongoing	n/a	n/a	Not recorded.	Ongoing	Ongoing Routine Can be required for major sites at point of residents moving in to ensure they are aware of all travel options/ options for travel other than private car.
60	Refresh Cambridge City Council Travel Plan	Promoting Travel Alternatives	Other	Cambridge City Council	Ongoing	Winter 2017/2018	Adoption of new Travel Plan	n/a	n/a	ongoing	Ongoing Routine To work and for work
61	Workplace Travel Plan	Promoting Travel Alternatives	Promote use of rail	TfC Camb County Council	In place	ongoing	n/a	n/a	n/a	ongoing	Ongoing Routine Discounts available for TfC partners
62	Cycle parking provision in Local Plan	Promoting Travel Alternatives	Promotion of Cycling	Environmental Services/ Planning District councils	In place	Ongoing	n/a	n/a	n/a	n/a	Complete Cycle parking provision in current Local Plan and will be carried forward to future Local Plans, standards to be reviewed

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
63	S106 agreements for cycling and walking infrastructure	Promoting Travel Alternatives	Promotion of Cycling	Environmental Services/ Planning District councils	In place	Ongoing	n/a	n/a	n/a	n/a	Ongoing Routine Part of development/ planning contributions
64	Cycle parking design guide	Promoting Travel Alternatives	Promotion of Cycling	Environmental Services/ Planning District councils	In place	Ongoing	n/a	n/a	In place	In place	Complete 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	Camb City Council/ Camb. County Council/	Ongoing	Ongoing	n/a	n/a	n/a	n/a	https://www.cambridge.gov.uk/cycling-and-walking
66	Schemes and grants	Promoting Travel Alternatives	Promotion of walking	Camb City Council/ Camb. County Council/	Ongoing	Ongoing	n/a	n/a	n/a	n/a	https://www.cambridge.gov.uk/cycling-and-walking
67	Travel for Cambridge shire Travel Plan Services	Promoting Travel Alternatives	School Travel Plans	TfC Camb County Council	Ongoing	Ongoing	n/a	n/a	n/a.	Ongoing	Ongoing Routine Travel Plan Services offer help with writing, developing, maintaining and monitoring as well as support for Travel Plan implementation

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
68	Travel for Cambridge shire Travel Plan Services	Promoting Travel Alternatives	Workplace Travel Plans	TfC Camb County Council	Ongoing	Ongoing	n/a	n/a	n/a	Ongoing	Ongoing Routine Travel Plan Services offer help with writing, developing, maintaining and monitoring as well as support for Travel Plan implementation
69	Travel for Cambridge shire (TfC)	Promoting Travel Alternatives	Other	TfC Camb County Council	Ongoing	Ongoing	n/a	n/a	n/a	Ongoing	Ongoing Routine TfC offers employers a range of services, tools and resources to support sustainable travel choices and commuting behavior, to help save time and money and improve staff health and wellbeing. 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	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	Ongoing	Ongoing	Ongoing Routine Delivered to every household in the district. Air quality articles in each quarter
71	Twitter and Facebook	Public Information	Social media	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	Ongoing	Ongoing	Ongoing Routine As required

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
72	Provide information on request	Public Information	Radio	Environmental health and Media Team, Camb City Council	As requested	Ongoing	n/a	n/a	Ongoing	Ongoing	Ongoing Routine As required
73	Provide information on request	Public Information	TV	Environmental health and Media Team, Camb City Council	As requested	Ongoing	n/a	n/a	Ongoing	Ongoing	Ongoing Routine As required
74	Website	Public Information	Internet	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	Ongoing	Ongoing	Ongoing Routine Plenty of information and updates on the City Council website ¹³
75	Clean Air Day	Public Information	Other	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	Ongoing	Ongoing	Ongoing Routine Ongoing campaign to provide information about air quality and actions
76	Campaigns to provide information about impacts air pollution on health	Public Information	Other	Environmental health and Media Team, Camb City Council, PH Camb County Council	Ongoing	2018 onwards	n/a	n/a	n/a	-	On hold Prepare and disseminate information about health impacts

¹³ <https://www.cambridge.gov.uk/air-pollution>

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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	Environmental health and Media Team, Camb City Council	Ongoing	2017 onwards	n/a	n/a	n/a	ongoing	Ongoing Routine Defra have recently produced information leaflets; these are available from the website and published in Cambridge Matters
79	Publicity campaign	Traffic Management	Anti-idling enforcement	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	n/a	Ongoing	Ongoing Routine Anti-idling information in Cambridge Matters
80	Penalty notices for non-compliance	Traffic Management	Anti-idling enforcement	Camb City Council	In Discussion	n/a	n/a	n/a	n/a	n/a	On hold Would need additional resource for enforcement Additional by-laws may be required. A briefing paper is to be prepared in Autumn 2019 to set out advantages/disadvantages/costs and implications
81	Expansion of residents' parking schemes	Traffic Management	Emission based parking and permit charges	Highways Team, Camb County Council	2017	2018	Number of parking spaces in schemes	n/a	Discussion phase	Rolling programme	Being progressed Will limit commuter traffic
82	Wider expansion of residents' parking schemes	Traffic Management	Emission based parking and permit charges	Highways Team, Camb County Council	2017	2019	Number of parking spaces in schemes	n/a	Discussion phase, tentative	Rolling programme	Being progressed Will further limit commuter traffic

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
83	Congestion charging or road user charging	Traffic Management	Road-User charging/ congestion zones	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	under discussion	TBC	n/a	n/a	n/a	n/a	Being progressed Demand Management work being undertaken by GCP, may complement Clean Air Zone
84	Reconfiguration of road space in Cambridge	Traffic Management	Strategic highways improvements	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	In discussion	TBC	Agreement and implementation of schemes	n/a at this stage	n/a	n/a	Being progressed. County/City/ GCP scheme. A Spaces and Movement SPD is planned for discussion at the GCP in Autumn 2019.
85	Creation of better cycling and walking on key routes	Traffic Management	Re-prioritisation of road space	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	In discussion	TBC	n/a	n/a	n/a	TBC	On hold
86	Extension of Core Area schemes – limiting access to city centre	Traffic Management	Access management	Infra-structure Team, Camb County Council, Greater Cambridge Partnership	In discussion	TBC	n/a	Could be substantial in Core Area	n/a	TBC	Being Progressed Could be part of CAZ. A Spaces and Movement SPD is planned for discussion at the GCP in Autumn 2019.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
88	Review of traffic signals in Cambridge	Traffic Management	UTC, congestion management, traffic reduction	Greater Cambridge Partnership	Review in progress	TBC	n/a	n/a	n/a	n/a	On hold 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 Management	Workplace Parking Levy	Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	TBC	n/a	n/a	n/a	Being Progressed County/City/ GCP scheme.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
91	Improvements to bus routes	Transport Planning and Infrastructure	Bus route improvements	Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	n/a	n/a	Ongoing	Ongoing	<p>Being progressed</p> <p>A1307 Three Campuses https://www.greatercambridge.org.uk/transport/transport-projects/cambridge_south_east_study/</p> <p>Cambourne to Cambridge corridor https://www.greatercambridge.org.uk/transport/transport-projects/cambourne-to-cambridge/</p> <p>Histon Road Link https://www.greatercambridge.org.uk/transport/transport-projects/histon-road/</p> <p>Milton Road Link https://www.greatercambridge.org.uk/transport/transport-projects/milton-road/</p> <p>City Access https://www.greatercambridge.org.uk/transport/transport-projects/</p>

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
92	New and/or improved cycle routes	Transport Planning and Infrastructure	Cycle network	Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	TBC	n/a	Chisholm Trail plans agreed/ A10 Royston to Cambridge completed	TBC	<p>Being progressed</p> <p>A10 Royston to Cambridge/A1307 Three Campuses/ Cambourne to Cambridge/Histon Road/Milton Road/City Access/</p> <p>Chisholm Trail Link https://www.greatercambridge.org.uk/transport/transport-projects/chisholm-trail/</p> <p>Cross City Cycling https://www.greatercambridge.org.uk/transport/transport-projects/cross-city-cycling/</p> <p>Greenways project Link https://www.greatercambridge.org.uk/transport/transport-projects/greenways/</p> <p>Cycling Quick Wins due by 2020, enhancing the city region's cycling network. Link https://www.greatercambridge.org.uk/cyclingquickwins/ .</p> <p>Madingley Road Link https://www.greatercambridge.org.uk/transport/transport-projects/madingley-road/</p>

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
93	New and/or improved walking routes	Transport Planning and Infrastructure	Cycle network	Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	TBC	n/a	Chisholm Trail plans agreed/ A10 Royston to Cambridge completed	TBC	<p>Being progressed</p> <p>A10 Royston to Cambridge/A1307 Three Campuses/ Cambourne to Cambridge/Histon Road/Milton Road/City Access/</p> <p>Chisholm Trail Link https://www.greatercambridge.org.uk/transport/transport-projects/chisholm-trail/</p> <p>Cross City Cycling https://www.greatercambridge.org.uk/transport/transport-projects/cross-city-cycling/</p> <p>Greenways project https://www.greatercambridge.org.uk/transport/transport-projects/greenways/</p>
94	Bike Hire schemes	Transport Planning and Infrastructure	Cycle hire scheme		In place	n/a	n/a	n/a	n/a	n/a	<p>Ongoing Routine</p> <p>Mobike are trialling bike hire schemes in Cambridge. This is viable without intervention from local authorities.</p>

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
95	Improvements to P&R sites	Transport Planning and Infrastructure	Public transport improvements – interchanges and stations	Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	TBC	n/a	n/a	n/a	Being progressed Greater Cambridge Partnership scheme.
96	Piloting rural hubs	Transport Planning and Infrastructure	Public transport improvements – interchanges and stations	Camb County Council/ Greater Cambridge Partnership	In discussion	TBC	n/a	n/a	n/a	n/a	Being progressed by Greater Cambridge Partnership – first trial hubs due in 2019 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 Infrastructure	Public transport improvements – interchanges and stations	Greater Cambridge Partnership with CBC2020 campus	In discussion	TBC	n/a	n/a	n/a	TBC	On hold Unlikely to be completed in the lifetime of this Plan but important for future.
102	Improve air quality by increasing tree cover	-	-	Camb City Council	In discussion	TBC	n/a	n/a	Part of arboricultural policy to increase canopy cover.	TBC	On hold Disruption of air flow intercepting particles as well as absorption into leaf tissue. Favour hypo-allergenic species

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Source apportionment using the Defra Background maps shows that most background PM_{2.5} in Cambridge has a regional component (95%). The background estimates across Cambridge vary between 11 and 12 micrograms per cubic metre (2016). PM_{2.5} is measured at two locations in Cambridge – Gonville Place and Newmarket Road. Recent measurements of PM_{2.5} at Newmarket Road indicate that there is a very small roads component in this location (11 micrograms per cubic metre annual mean), but at Gonville Place there is an additional contribution of up to 3 micrograms per cubic metre PM_{2.5}¹⁴ (15 micrograms per cubic metre annual mean). Most parts of Cambridge have ‘background’ levels of PM_{2.5}, but it appears likely that hotspots are present in locations of high traffic density, such as Gonville Place.

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 PM_{2.5}. These would need to be addressed by regional, national and international measures.

There are measures in the Action Plan that address the sources of nitrogen dioxide will also help to reduce particulate matter (PM₁₀ and PM_{2.5}); which include:

- Ensuring that any increase in public transport provision is offset, at least, by improvements in tail-pipe emissions.

¹⁴ Annual Status Report,
<https://democracy.cambridge.gov.uk/ieListDocuments.aspx?CId=177&MIId=2570&Ver=4>

- 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.
- 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.
- Control of wood/coal burning from boats via licence/permit mooring agreements.
- Emission standards for low carbon technologies such as gas Combined Heat and Power (CHP) are sought through the use of planning conditions.

The Public Health Outcomes Framework indicator for air pollution is about raising awareness of the effect of air pollution on public health. It is intended to encourage promotion of the need for local, regional and national actions to reduce air pollution and to help form a partnership between all delivery partners in pursuit of this goal. The Public Health Outcomes Framework concentrates on two high-level outcomes to be achieved across the public health system, and focuses not only on how long people live, but on how well they live at all stages of life.

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

3.1 Summary of Monitoring Undertaken

Minimal changes were made to the monitoring network in 2018. Six additional tubes have been added to the diffusion tube network; five in response to increased development and a sixth in the station area (DT63) in Station Square where taxis drop off and pick up. The monitoring strategy is continually under review.

All automatic monitors achieved data capture above 95% (with the exception of nitrogen dioxide at Newmarket Road which achieved above 90%) and only three diffusion tubes required annualisation.

The levels of NO₂ recorded both inside and outside the AQMA in 2018 remain typically stable when compared with 2017 results; with a continuing small but downward trend when considered longer term. Both PM₁₀ and PM_{2.5} levels have a stable trend. No changes to the Air Quality Management Area are proposed.

3.1.1 Automatic Monitoring Sites

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

Cambridge City Council undertook automatic (continuous) monitoring at 5 sites during 2018. Table A.1 in Appendix A shows the details of the sites.

Cambridge City Council monitors levels of benzene for the non-automatic monitoring network at the AURN site.

National monitoring results are available at [https:// www.cambridge.gov.uk/air-pollution-levels-and-monitoring-them](https://www.cambridge.gov.uk/air-pollution-levels-and-monitoring-them).

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 (passive) monitoring of NO₂ at 69 sites during 2018. Table A.2 in Appendix A shows the details of the sites. On review of the monitoring network 6 tubes were added in 2018. Coldhams Lane 3 (DT59), Barnwell Road (DT60) and Newmarket Road 3 (DT61) were added in response to the large scale development which will be beginning soon across the east of the city. The Park Street (DT64) is located along a road adjacent to the entrance of a multi storey car park (MSCP). The road is narrow and there is a lot of planned development which could impact on this area including the redevelopment of the MSCP itself. We were keen to get an understanding of actual levels at this site prior to the planned development. Station Square (DT63) has been classified as 'Other'. This is located adjacent to a taxi rank in an open square.

These five tubes were installed in April 2018. Both Park Street and Station Square have been annualised due to missing data.

Mill Road 2 (DT62) was only added to the network in November 2018 therefore no data is yet available. Again this has been added to monitor any changing trends in an area where there has been development which could lead to increased vehicle movements along an already busy road.

Maps showing the location of the monitoring sites are provided in Appendix D. Work is underway to have improved details available on the city council website.

Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. "annualisation" and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Automatic Monitors

No automatic monitoring sites exceeded the AQ objective annual mean concentration of 40µg/m³ in 2018.

There was a marked decrease at the city centre monitors at Regent Street and Parker Street with the remaining monitors further out of the centre (Newmarket Road, Montague Road and Gonville Place) remaining typically stable.

Four of the five sites recorded a decrease with a small increase at Montague Road.

A single hourly exceedance was recorded at Montague Road in 2018. There were no hourly exceedances at the remaining sites.

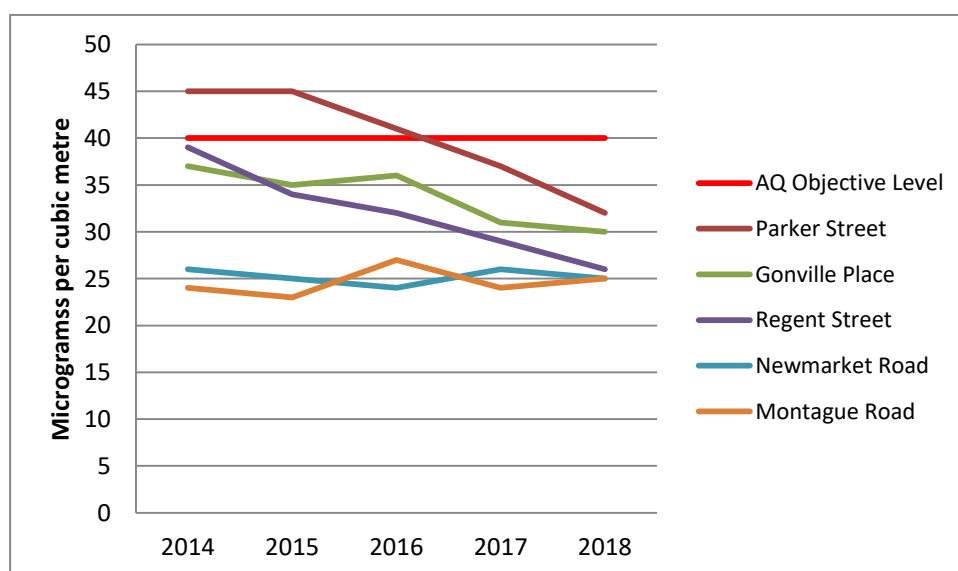


Figure 3.1 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Automatic Sites

Diffusion Tubes

The majority of the diffusion tubes within the Cambridge City Council boundary are in place to monitor changing trends in traffic and are therefore located mostly at roadside or kerbside. The results reported in Table A3 are therefore mean annual concentrations which have been bias adjusted and if applicable annualised. They have **not** been adjusted for relevant exposure as this would not be directly comparable with previous year's results.

For diffusion tubes the full 2018 dataset of monthly mean values is provided in Appendix B along with adjusted figures for relevant exposure. All of these are below the air quality objective of $40\mu\text{g}/\text{m}^3$.

Cambridge City Council had 71 diffusion tubes located at 69 locations (triplicate at Gonville Place) across the city in 2018. Of the 69 locations 37 tubes recorded a decrease, 10 recorded no change, 16 recorded an increase and 6 were new.

It is worth noting that the majority of results have remained fairly constant with only a fluctuation up or down of $3\mu\text{g}/\text{m}^3$ (58 of 63 tubes). Where there is a more marked increase or decrease this can typically be explained by traffic flow changes.

The Background remained level and both Urban background sites dropped by $1\mu\text{g}/\text{m}^3$ compared with 2017.

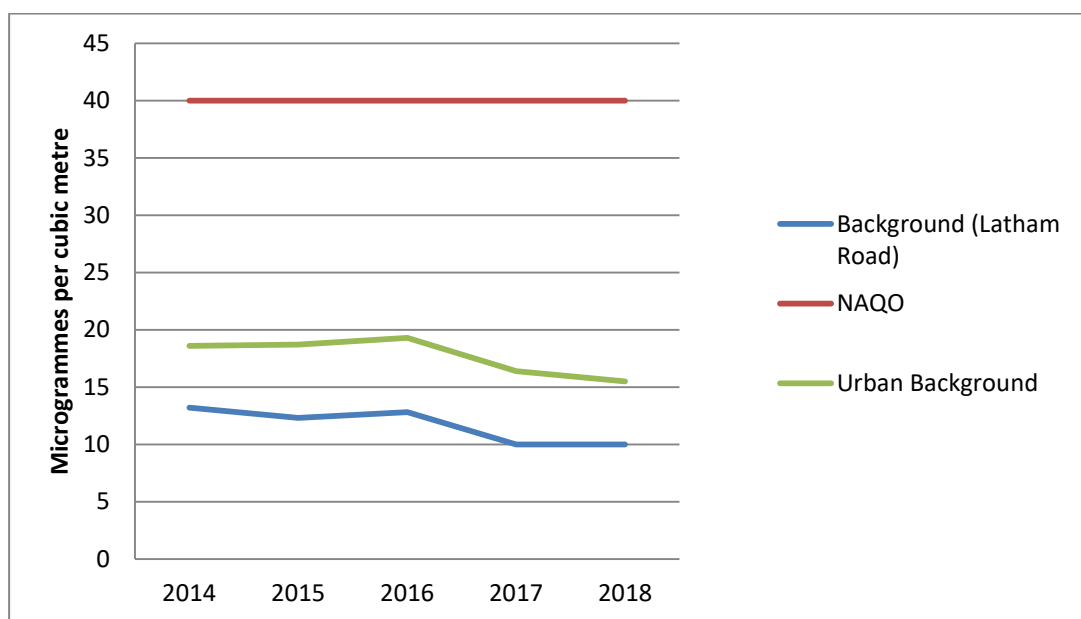


Figure 3.2 Trend in averaged mean annual NO_2 for Background and Urban background site

The trend data for the Radial Roads, Inner Ring Road and Inner City Streets have continued downwards following the marked drop in 2017. This may be due to improvements from emissions finally beginning to be realised as older cars are removed from the road.

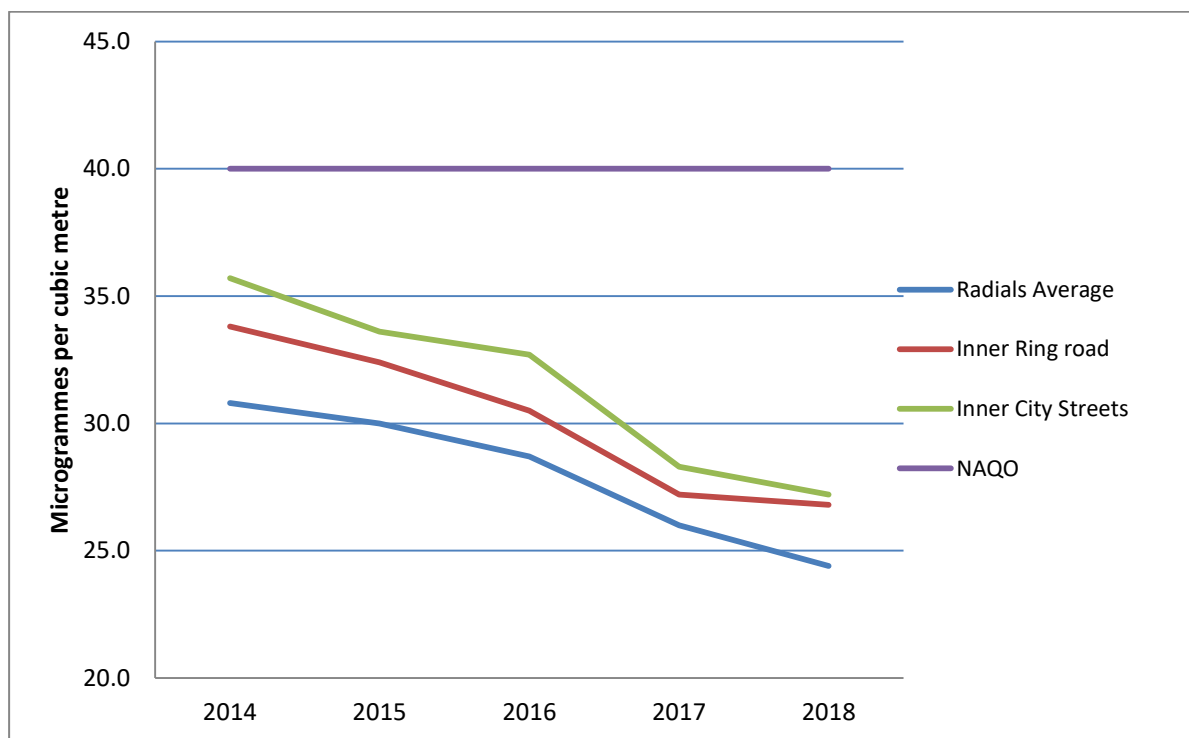


Figure 3.3: Trend in averaged mean annual NO₂ for Radial Roads, Inner Ring Road and Inner City Streets

The roads around the bus station (with the exception of the Parker Street Automatic Monitor) contradict the typically downward trend all showing a small increase. It has been suggested that the number of older buses has increased as larger bus providers shift newer buses into cities that have introduced clean air zones. The results in this area would support this hypothesis.

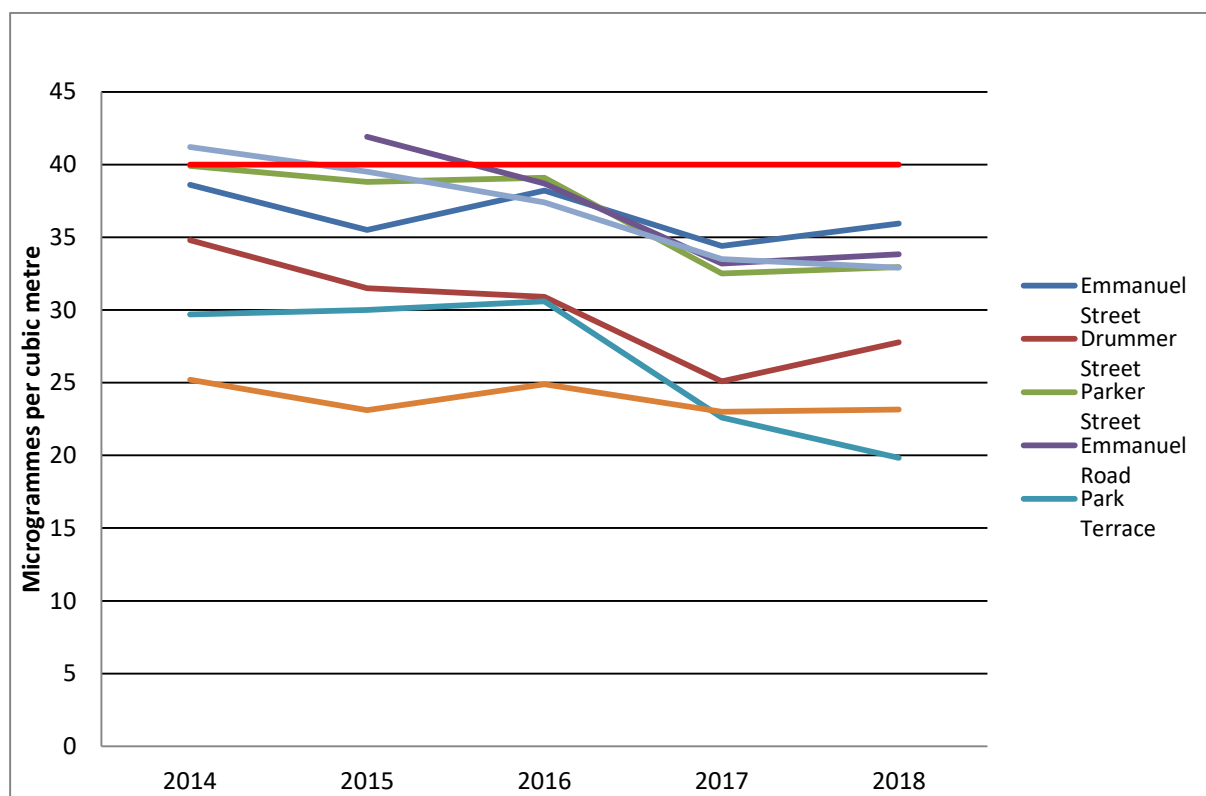


Figure 3.4: Trend in averaged mean annual NO₂ for Bus Station area

The CB1 area of Cambridge close to the train station is an area of ongoing extensive development. We monitor nitrogen dioxide levels in this area because of the scale of the residential development, alongside the high levels of traffic travelling to the station including taxis and buses. All recorded levels remained below objective levels and in 2018 levels show either a small decrease or remained stable. We introduced a new tube at Station Square. Although this is an open square it houses the taxi rank for the station and drop-off point for station users. Understanding air quality around the station and identifying localised hotspots is key, hence the introduction of a further tube in this area.

This area continues to undergo change and it will be some time before a clear picture of the air quality in this area is established.

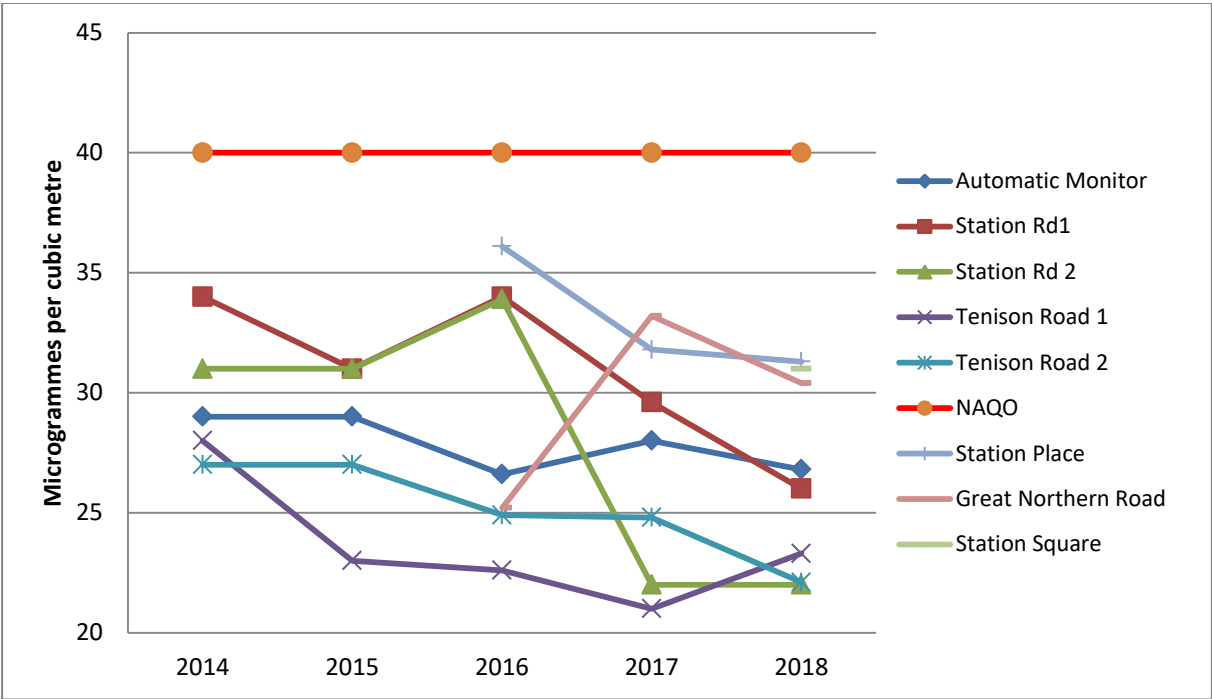


Figure 3.5: Trend in averaged mean annual NO₂ for CB1

Southern Cambridge is another area which is undergoing extensive development. Recorded air pollution levels in 2018 have remained typically stable compared with 2017. We will continue to monitor the NO₂ levels in this part of the city as development continues.

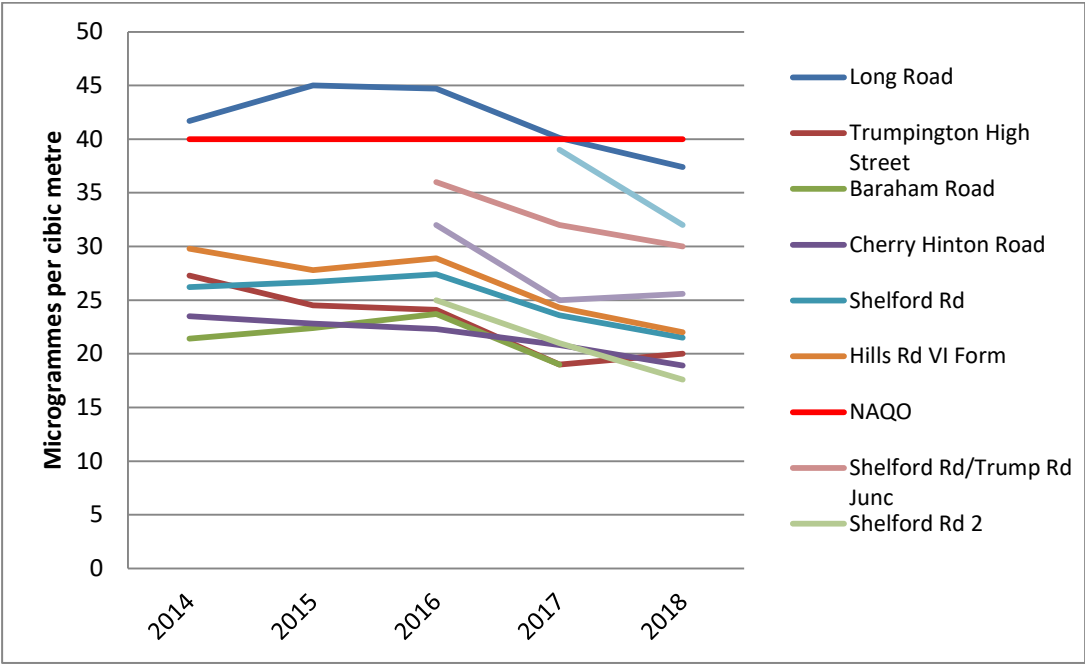


Figure 3.6: Trends in averaged mean annual NO₂ in Southern Cambridge

3.2.2 Particulate Matter (PM₁₀)

Table A. in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

PM₁₀ is monitored at three sites in Cambridge; Gonville Place, Montague Road and Parker Street all of which are roadside sites. All data has been fully ratified (see Appendix C).

Mean annual PM₁₀ levels increased slightly at all sites. This could be accounted for by the increase in older buses entering the city as highlighted above. However Figure 3.7 demonstrates that despite small fluctuations both up and down the trend in the annual mean PM₁₀ concentration remains stable with levels for PM₁₀ remaining well below the National Air Quality Objective.

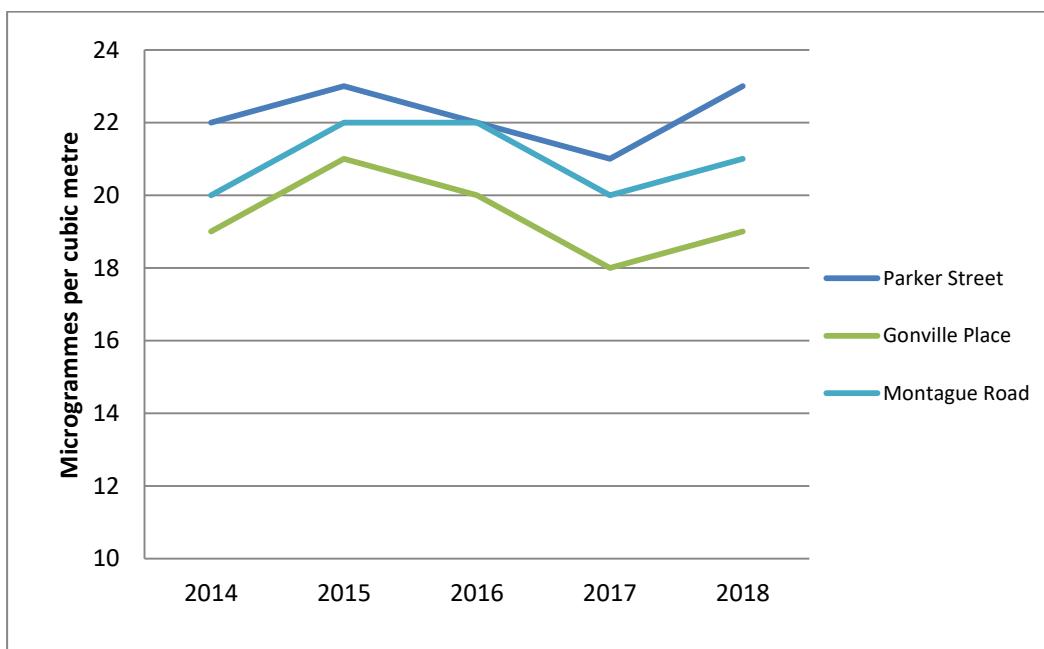


Figure 3.7 Trends in Annual Mean PM_{10} Concentrations

There is a again a small increase in the number of 24-hour mean exceedences (greater than $50\mu g/m^3$) at two sites (Gonville Place and Montague Road) with it remaining stable at Parker Street. This number of exceedences fluctuates from year to year as seen in Figure 3.8 but remain well below the threshold of 35 exceedences per year.

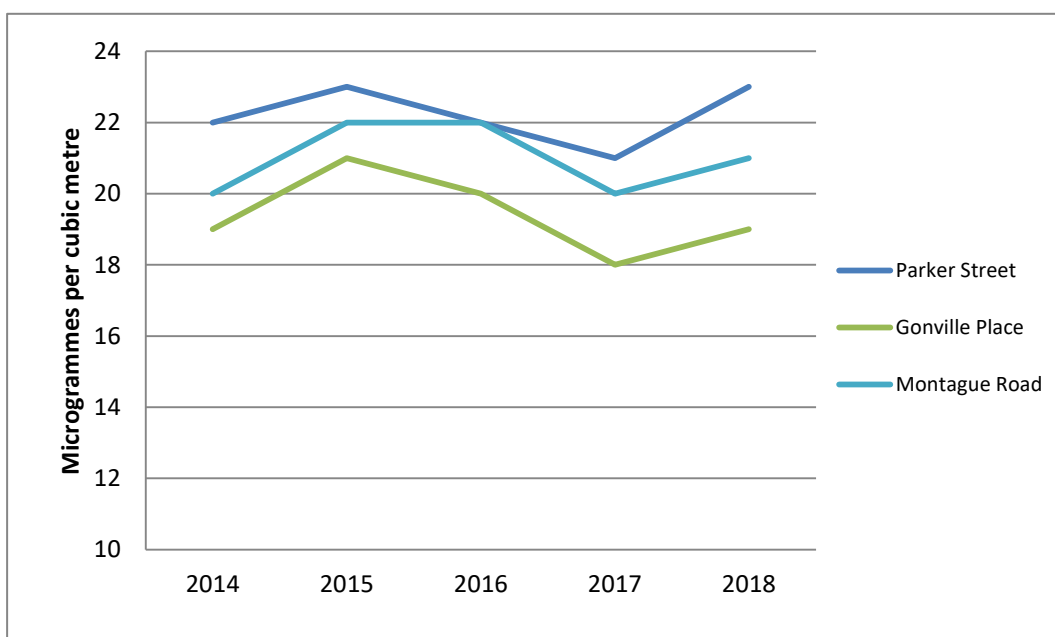


Figure 3.8: Number of 24-Hour mean PM_{10} results $>50\mu g/m^3$

3.2.3 Particulate Matter (PM_{2.5})

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

PM_{2.5} is monitored at two sites in Cambridge; Gonville Place and Newmarket Road. All data has been fully ratified (see Appendix C).

Mean annual PM_{2.5} levels remained stable at Gonville and decreased slightly at Newmarket Road. Figure 3.9 shows the overall trend in concentrations remaining stable despite small fluctuations both up and down from year to year. This is in line with PM₁₀ results.

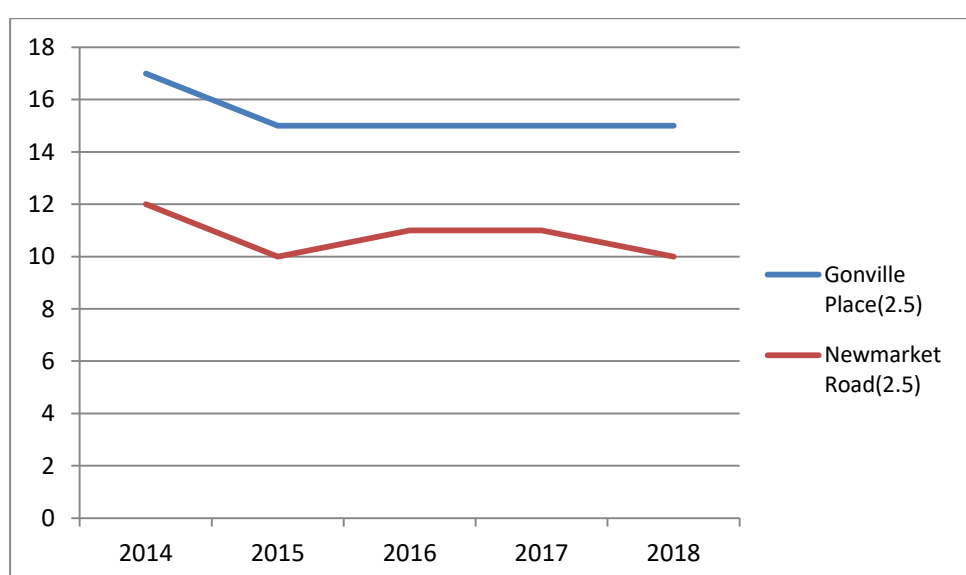


Figure 3.9: Trends in Annual Mean PM_{2.5} Concentrations

3.2.4 Benzene

Cambridge City Council has measured benzene at Cambridge Roadside on behalf of the non-automatic monitoring network since February 2008. The annual mean for 2018 is 0.56µg/m³ and the annual maximum is 1.00µg/m³. This is a reduction compared with the 2017 results. The National Air Quality Objective of 5µg/m³ is not approached.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
CM1	Gonville Place	Roadside	545 508	257 828	NO ₂ , PM ₁₀ , PM _{2.5}	YES	Chemiluminescence, M200E	1.8	3.2	2
CM2	Montague Road	Roadside	546 057	259487	NO ₂ , PM ₁₀	YES	2 x BAM-1020	1.4	3.9	2
CM3	Newmarket Road	Roadside	546 317	258 900	NO ₂ , PM _{2.5}	YES	Chemiluminescence, M200E	0.5	3.3	2
CM4	Parker Street	Roadside	545 366	258 391	NO ₂ , PM ₁₀	YES	BAM-1020	0.5	3.3	2.5
CM5	Regent Street	Roadside	545 289	258 118	NO ₂	YES	Chemiluminescence, 42c	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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT1	Emmanuel Street	Roadside	545,293	258,418	NO2	YES	0	2.4	NO	2.5
DT2	Histon Road 2	Roadside	544,284	261,273	NO2	NO	20	1.7	NO	2.5
DT3	Magdalene Street	Roadside	544,674	258,992	NO2	YES	0	2	NO	2.5
DT4	Northampton Street	Roadside	544,492	259,021	NO2	YES	0	2	NO	2.5
DT5	Silver Street	Roadside	544,783	258,116	NO2	YES	0	1	NO	2.5
DT6	Long Road	Kerbside	544,867	255,709	NO2	NO	20	0.1	NO	2
DT7	Newmarket Road 1	Roadside	546,195	258,867	NO2	YES	2	1.7	NO	2
DT8	Milton Road	Roadside	545,977	260,352	NO2	NO	3	8	NO	2
DT9	Drummer Street	Roadside	545,247	258,472	NO2	YES	0	2.1	NO	2.5
DT10	Gilbert Road	Roadside	545,314	259,777	NO2	NO	10	1	NO	2
DT11	Latham Road	Background	544,784	256,746	NO2	NO	10	N/A	NO	2
DT12	Newmarket Road 2	Roadside	547,998	259,349	NO2	YES	30	3.7	NO	2
DT13	East Road	Roadside	545,908	258,439	NO2	YES	1	4	NO	2.5
DT14	Mill Road	Roadside	546,080	257,944	NO2	YES	0	2	NO	2
DT15	Hills Road	Kerbside	545,557	257,695	NO2	YES	2	0.4	NO	2
DT16	Regent Street	Roadside	545,289	258,118	NO2	YES	0	2.5	YES	2.5
DT17	Coldhams Lane	Roadside	547,216	258,286	NO2	NO	10	3.5	NO	2
DT18	Pembroke Street	Roadside	544,884	258,098	NO2	YES	0	1.2	NO	2
DT19	Huntingdon Road 2	Roadside	543,101	260,344	NO2	NO	25	2.5	NO	2

DT20	Elizabeth Way	Roadside	546,062	259,260	NO2	YES	50	1	NO	2.5
DT21	Victoria Road	Roadside	544,425	259,560	NO2	YES	0	1.8	NO	2
DT22	Madingley Road	Kerbside	543,784	259,093	NO2	NO	20	0.8	NO	2
DT23	Huntingdon Road 1	Roadside	543,761	259,813	NO2	NO	15	1	NO	2
DT24	Histon Road 1	Kerbside	544,308	259,664	NO2	NO	2	0.5	NO	2
DT25	Barton Road	Roadside	544,100	257,473	NO2	NO	20	2.2	NO	2
DT26	Fen Causeway	Roadside	544,943	257,567	NO2	YES	50	2.1	NO	2
DT27	Trumpington High St	Roadside	544,575	255,307	NO2	NO	5	2.7	NO	2
DT28	Babraham Road	Roadside	546,948	255,169	NO2	NO	20	1.2	NO	2
DT28	Babraham Road - NEW	Roadside	546,953	255,138	NO2	NO	30	0.5	NO	2
DT29	Cherry Hinton Road	Kerbside	548,331	256,242	NO2	NO	10	0.8	NO	2.5
DT30	Arbury Road	Kerbside	545,693	260,473	NO2	NO	5	0.8	NO	2
DT31	Newnham Road	Roadside	544,529	257,730	NO2	YES	0	1.6	NO	2
DT32	Hills Road 2	Roadside	546,186	256,530	NO2	NO	2	3.6	NO	2.5
DT33	Victoria Avenue	Roadside	545,331	259,438	NO2	YES	0	1.4	NO	2
DT34	Parker Street	Roadside	545,370	258,399	NO2	YES	0	1.4	NO	2.5
DT35	Abbey Road	Roadside	546,163	258,983	NO2	YES	1	1.7	NO	2
DT36	Cockburn Street	Urban Background	546,596	257,594	NO2	YES	0	1.5	NO	2
DT37	Oaktree Avenue	Urban Background	545,885	260,088	NO2	YES	10	1	NO	2
DT38	Chesterton Road	Roadside	545,566	259,578	NO2	YES	2	2.7	NO	2
DT39	Maids Causeway	Kerbside	545,710	258,782	NO2	YES	5	0.8	NO	2
DT40	Emmanual Road	Roadside	545,405	258,521	NO2	YES	0	1.5	NO	2
DT41	Downing Street	Roadside	545,162	258,240	NO2	YES	0	1.3	NO	2

DT42	Trumpington Street	Roadside	544,999	257,871	NO2	YES	2	1.4	NO	2
DT43	Lensfield Road	Roadside	545,271	257,675	NO2	YES	5	1.8	NO	2
DT44	Park Terrace	Roadside	545,429	258,271	NO2	YES	3	1.9	NO	2.5
DT45	St Andrew's St	Urban Centre	545,147	258,367	NO2	YES	1	0.8	NO	2.5
DT46	Parkside	Kerbside	545,539	258,295	NO2	YES	10	0.5	NO	2
DT47/ 48/49	Gonville Place (triplicate)	Roadside	545,508	257,828	NO2	YES	0	3.3	YES	2
DT50	Hills Road 3	Roadside	545,893	257,152	NO2	NO	3	3	NO	2
DT51	Shelford Road	Roadside	544,960	254,220	NO2	NO	5	2	NO	2
DT52	Station Road 2 east	Kerbside	546,019	257,300	NO2	YES	10	0.4	NO	2.5
DT53	Station Road 1 West	Kerbside	545,897	257,325	NO2	YES	10	0.4	NO	2.5
DT54	Tenison Road	Kerbside	546,027	257,663	NO2	YES	4	0.2	NO	2.5
DT55	Tenison Road 2	Kerbside	546,005	257,405	NO2	YES	4	0.3	NO	2.5
DT56	Coldhams Lane 2	Roadside	546,602	258,796	NO2	YES	8	1.7	NO	2
DT57	Great Northern Road	Kerbside	546080	257130	NO2	NO	3	0.2	NO	2.5
DT58	Station Place	Kerbside	546100	257390	NO2	NO	5	0.5	NO	2.5
DT59	Coldhams Lane 3	Roadside	548858	257162	NO2	NO	7.5	2.5	NO	2.5
DT60	Barnwell Road	Kerbside	547917	258942	NO2	NO	7.5	0.2	NO	2.5
DT61	Newmarket Road 3	Roadside	546341	258882	NO2	YES	10	2	NO	2.5
DT62	Mill Road 2	Roadside	547181	257566	NO2	NO	0	2.5	NO	2.5
DT63	Station Square	Other	546176	257308	NO2	YES	N/A	1	NO	2.5
DT64	Park Street	Roadside	544955	258850	NO2	YES	8	2	NO	2.5
DTS1	Brooklands Avenue	Roadside	545894	257025	NO2	NO	20	1	NO	2.5
DTS2	Shelford/Trumpington Rd	Roadside	544614	254646	NO2	NO	15	1	NO	2.5

DTS3	Shelford Rd 2	Kerbside	544664	254600	NO2	NO	15	0.5	NO	2.5
DTS4	Addenbrookes Access Road	Roadside	545237	254212	NO2	NO	10	3	NO	2.5
DTS5	Fendon Road	Kerbside	546702	255380	NO2	NO	20	0.5	NO	2.5
DTS6	Hills Road 4	Roadside	546700	255374	NO2	NO	30	3	NO	2.5
DTS7	Trumpington road 2	Kerbside	545245	256860	NO2	NO	20	0.5	NO	2.5

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
DT1	Roadside	Diffusion Tube	83	83	<u>39</u>	35	38	34	36
DT2	Roadside	Diffusion Tube	92	92	<u>32</u>	31	27	23	24
DT3	Roadside	Diffusion Tube	100	100	<u>30</u>	28	27	21	22
DT4	Roadside	Diffusion Tube	92	92	<u>39</u>	38	37	33	31
DT5	Roadside	Diffusion Tube	100	100	<u>36</u>	33	34	29	26
DT6	Kerbside	Diffusion Tube	100	100	<u>42</u>	45	45	40	37
CM3	Roadside	Automatic	90.78	90.78	<u>26</u>	25	24	26	25
DT7	Roadside	Diffusion Tube	100	100	<u>39</u>	39	35	32	33
DT8	Roadside	Diffusion Tube	100	100	<u>23</u>	23	20	19	18
DT9	Roadside	Diffusion Tube	83	83	<u>35</u>	32	31	25	28
DT10	Kerbside	Diffusion Tube	100	100	<u>21</u>	21	22	21	20
DT11	Background	Diffusion Tube	83	83	<u>13</u>	12	13	10	10
DT12	Roadside	Diffusion Tube	100	100	<u>29</u>	28	29	28	25
DT13	Roadside	Diffusion Tube	100	100	<u>30</u>	28	26	24	24
DT14	Roadside	Diffusion Tube	92	92	<u>28</u>	27	25	24	23

DT15	Roadside	Diffusion Tube			<u>37</u>	35	36	31	N/A
CM5	Roadside	Automatic	97.33	97.33	<u>39</u>	34	32	29	26
DT16	Roadside	Diffusion Tube	83	83	<u>33</u>	34	30	29	27
DT17	Roadside	Diffusion Tube	83	83	<u>25</u>	26	24	22	21
DT18	Roadside	Diffusion Tube	92	92	<u>43</u>	39	36	34	30
DT19	Roadside	Diffusion Tube	92	92	<u>23</u>	27	23	21	20
CM2	Roadside	Automatic	98.23	98.23	<u>24</u>	23	27	24	25
DT20	Roadside	Diffusion Tube	100	100	<u>35</u>	32	31	26	27
DT21	Roadside	Diffusion Tube	100	100	<u>33</u>	30	28	25	24
DT22	Kerbside	Diffusion Tube	92	92	<u>40</u>	38	37	33	30
DT23	Roadside	Diffusion Tube	92	92	<u>25</u>	24	23	19	17
DT24	Kerbside	Diffusion Tube	83	83	<u>32</u>	35	29	29	24
DT25	Roadside	Diffusion Tube	92	92	<u>20</u>	22	22	19	19
DT26	Roadside	Diffusion Tube	100	100	<u>24</u>	23	22	19	19
DT27	Roadside	Diffusion Tube	100	100	<u>27</u>	25	24	19	20
DT28 – old	Roadside	Diffusion Tube			<u>21</u>	22	24	19	N/A
DT28 - New	Roadside	Diffusion Tube	100	100	<u>N/A</u>	N/A	N/A	39	32
DT29	Roadside	Diffusion Tube	100	100	<u>23</u>	23	22	21	19
DT30	Roadside	Diffusion	83	83	<u>21</u>	20	19	18	17

		Tube							
DT31	Roadside	Diffusion Tube	100	100	<u>44</u>	42	33	31	31
DT32	Roadside	Diffusion Tube	83	83	<u>30</u>	28	29	24	22
DT33	Roadside	Diffusion Tube	100	100	<u>40</u>	38	37	35	35
CM4	Roadside	Automatic	96.7	96.7	<u>45</u>	45	41	37	32
DT34	Roadside	Diffusion Tube	83	83	<u>40</u>	39	39	32	33
DT35	Roadside	Diffusion Tube	100	100	<u>23</u>	22	21	19	17
DT36	Urban Background	Diffusion Tube	92	92	<u>19</u>	20	20	17	16
DT37	Urban Background	Diffusion Tube	100	100	<u>18</u>	17	18	16	15
DT38	Roadside	Diffusion Tube	83	83	<u>26</u>	26	26	23	21
DT39	Kerbside	Diffusion Tube	92	92	<u>33</u>	34	32	28	30
DT40	Roadside	Diffusion Tube	83	83	<u>40</u>	42	39	33	34
DT41	Roadside	Diffusion Tube	83	83	<u>38</u>	34	36	28	31
DT42	Roadside	Diffusion Tube	92	92	<u>26</u>	26	27	24	20
DT43	Roadside	Diffusion Tube	92	92	<u>34</u>	34	36	32	29
DT44	Roadside	Diffusion Tube	83	83	<u>30</u>	30	31	23	20
DT45	Roadside	Diffusion Tube	75	75	<u>42</u>	40	37	33	33
DT46	Roadside	Diffusion Tube	75	75	<u>25</u>	23	25	23	23
CM1	Roadside	Automatic	99.37	99.37	<u>37</u>	35	36	31	30

DT47/48/49	Roadside	Diffusion Tube	92	92	<u>37</u>	36	35	31	31
DT50	Roadside	Diffusion Tube	100	100	<u>32</u>	32	32	23	25
DT51	Roadside	Diffusion Tube	100	100	<u>26</u>	27	27	24	22
DT52	Kerbside	Diffusion Tube	66	66	<u>31</u>	31	34	22	22
DT53	Kerbside	Diffusion Tube	83	83	<u>34</u>	31	34	30	23
DT54	Roadside	Diffusion Tube	83	83	<u>28</u>	23	23	21	23
DT55	Roadside	Diffusion Tube	92	92	<u>27</u>	26	25	25	22
DT56	Roadside	Diffusion Tube	100	100	<u>30</u>	27	27	23	23
DT57	Roadside	Diffusion Tube	92	92	<u>N/A</u>	N/A	25	33	30
DT58	Kerbside	Diffusion Tube	92	92	<u>N/A</u>	N/A	36	32	31
DT59	Roadside	Diffusion Tube	75	75	<u>N/A</u>	N/A	N/A	N/A	15
DT60	Kerbside	Diffusion Tube	75	75	<u>N/A</u>	N/A	N/A	N/A	23
DT61	Roadside	Diffusion Tube	75	75	<u>N/A</u>	N/A	N/A	N/A	33
DT62	Roadside	Diffusion Tube			<u>N/A</u>	N/A	N/A	N/A	N/A
DT63	Other	Diffusion Tube	66	66	<u>N/A</u>	N/A	N/A	N/A	31
DT64	Roadside	Diffusion Tube	50	50	<u>N/A</u>	N/A	N/A	N/A	24
DTS1	Roadside	Diffusion Tube	92	92	<u>N/A</u>	N/A	27	22	24
DTS2	Roadside	Diffusion Tube	100	100	<u>N/A</u>	N/A	36	32	30

DTS3	Roadside	Diffusion Tube	92	92	<u>N/A</u>	N/A	25	21	18
DTS4	Roadside	Diffusion Tube	100	100	<u>N/A</u>	N/A	22	18	17
DTS5	Roadside	Diffusion Tube	100	100	<u>N/A</u>	N/A	27	24	22
DTS6	Roadside	Diffusion Tube	92	92	<u>N/A</u>	N/A	27	22	21
DTS7	Roadside	Diffusion Tube	100	100	<u>N/A</u>	N/A	32	25	26

☒ Diffusion tube data has been bias corrected

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

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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

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

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

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2014	2015	2016	2017	2018
CM1	Roadside	Automatic	99.37	99.37	0	2	0	0	0
CM2	Roadside	Automatic	98.23	98.23	0	0	0	0	1
CM3	Roadside	Automatic	90.78	90.78	0 (82)	0 (82)	0	0	0
CM4	Roadside	Automatic	96.7	96.7	0	0	0	0	0
CM5	Roadside	Automatic	97.33	97.33	0	0	0	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2014	2015	2016	2017	2018
CM1	Roadside	99.22	99.22	19	21	20	18	19
CM2	Roadside	93.97	93.97	20	22	22	20	21
CM4	Roadside	97.6	97.6	22	23	22	21	23

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

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾				
				2014	2015	2016	2017	2018
CM1	Roadside	99.22	99.22	5	2	1	3	1
CM2	Roadside	93.97	93.97	4	4	2	3	1
CM4	Roadside	97.6	97.6	5	4	4	4	1

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Table A.7 – PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2014	2015	2016	2017	2018
CM1	Roadside	98.54	98.54	17	15	15	15	15
CM3	Roadside	98.05	98.05	12	10	11	11	10

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

Notes:

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.71) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DT1	54.5	44.6	59.5	55.5	46	44		47.2		50.6	53.6	50.9	50.6	36.0	36.0
DT2	38.4	35.2	43	30.1	36.9	32.5	36	30.9	30.8	33.9		31.7	34.5	24.5	16.0
DT3	28.2	33.2	33.3	29.6	34.5	26.2	30	25.1	27.2	33.7	34	32	30.6	21.7	21.7
DT4	46.2	47.8		45.3	39.1	35	44.7	37.1	43.1	44.6	42.1	52.3	43.4	30.8	30.8
DT5	42.2	39.1	42.7	36.9	32.2	25.1	35.2	29.9	37.3	38.5	48.1	35	36.9	26.2	26.2
DT6	62.1	40.5	57.9	52.1	50.2	44.3	47.3	50.8	59.6	59.3	48.9	59.6	52.7	37.4	17.2
DT7	46.5	50.3	49	38	38.4	34.6	0	68.3	46.8	77.9	48.5	51.5	45.8	32.5	29.0
DT8	30.8	29.8	28.3	24.7	15.2	13.6	20.1	20.8	25	27.3	34.5	30.9	25.1	17.8	17.1
DT9	39	47.9	43	40.4	38	33.8		38.3		36	35	39.7	39.1	27.8	27.8
DT10	33.8	33.9	32.3	28.2	9.5	15.5	19.1	25.2	27	34.7	40.6	34.9	27.9	19.8	15.2
DT11			16.6	13.6	8.2	6.5	8.9	10.8	13.7	17.1	20.6	18.8	13.5	9.6	-
DT12	43.7	35.1	43.1	33.7	25.5	20.6	30.4	32.4	35.4	36	40.7	46.4	35.3	25.0	14.0
DT13	41.8	36	39.2	32.1	25	24.5	27.3	27	35.8	37.8	37.2	43.8	34.0	24.1	23.1
DT14	32.4	39.2	37.1	34.5		20.1	25.8	20	29.2	39.2	37.4	34.1	31.7	22.5	22.5
DT15		43.6				35.5					39.3	39.3	39.4	28.0	22.5

DT16	43.2	42		39.8	32.6	24.3	36.7	36	36.5	43.9	39.5		37.5	26.6	26.6
DT17			34.9	29	28.3	20.7	25	23.5	27.1	35.6	33.2	38.4	29.6	21.0	17.0
DT18	46.6	49.2	48.6	46.1	29	31.8	44.1		37	43.1	44.9	47.1	42.5	30.2	30.2
DT19	31.7	30.9	31.8	49.1	12.2	12.1		20.3	24.4	28.4	33.3	28.2	27.5	19.5	14.1
DT20	39.6	44.2	39.3	38	37.4	27.8	35.3	27.7	36.1	45.7	40	46	38.1	27.0	13.6
DT21	36.4	39.3	34	29.5	32.3	25.8	32	30.8	33.8	29.3	36.7	42.3	33.5	23.8	23.8
DT22		45.3	46.6	45.1	39.1	34.5	41.4	38.9	36.2	48.7	50.8	45	42.9	30.4	17.4
DT23	9.9	31.6	33.4	26.6	10.6		25.9	22.3	23.1	27.5	31.4	22.5	24.1	17.1	13.1
DT24	44	39.5		39.8	28.7	20.7	36.1	32.7		36.5	33.4	32.2	34.4	24.4	20.0
DT25	26.3	28.1	30.8	23	18.6	19	22.1	20.7		28.1	37.2	47	27.4	19.4	14.0
DT26	23.9	33.6	34.3	24.6	22.7	24.2	24.8	18.3	21.5	28.9	32.7	33.4	26.9	19.1	12.2
DT27	29.7	32.1	35.1	26.4	19.5	17.2	20.9	20	26.7	33.1	43.1	33.4	28.1	20.0	17.4
DT28	48.5	36.7	48.7	45.4	37.5	30.2	49.4	45.5	50.6	50.3	48.5	50.3	45.1	32.0	16.0
DT29	32.3	29.3	31.8	25.6	20.1	15.1	21	24.5	27.4	31	27.8	33.1	26.6	18.9	14.5
DT30	24.6	29.7	28	23		8.8		19.3	22.8	29.7	29.7	28.2	24.4	17.3	14.3
DT31	45.4	46.1	50.4	37.3	41.3	39	48.6	40.7	37.2	42.8	50.2	44.3	43.6	31.0	31.0
DT32	35.7	36.6	31.7	31		23.5	29.3	26.1	26.4		34.7	34.7	31.0	22.0	20.6
DT33	50.6	44.5	62.6	44.9	51.3	46.7	52.2	40.8	41.9	50.8	52.5	49.9	49.1	34.8	34.8
DT34	48.3	46.4	56.9	43.6	45.4	33.8	44.7			45.3	49.5	50.3	46.4	33.0	33.0
DT35	25.2	29.7	20.6	19.3	16.2	11.6	17.8	20.7	26.7	29.3	30.4	34.3	23.5	16.7	16.3
DT36	27.5	25.7	25.9	20.4	14.9	13.9		17.7	20.4	27	25.2	28.8	22.5	16.0	16.0
DT37	22.7	23.3	25.4	20.4	13.9	11.9	15.5	17.2	22.3	26.8	25.3	29.3	21.2	15.0	12.6
DT38		36.4		29.7	23.2	18.4	23.8	27.4	32.8	36.3	36.2	36.7	30.1	21.4	19.5
DT39	48.1	48	45.6	37.2	34.9		33	33.3	41	44.6	44.6	49	41.8	29.6	22.4
DT40	46.6	53.6	56	45.4	49.6		44.6	42.2	43.3	45.2	50.1		47.7	33.8	33.8
DT41	40.6	41.7	53	45.3	37.2	35	38.1			46.3	48.9	51.3	43.7	31.1	31.1
DT42		31.5	39	27.5	21.4	11.9	23.7	23.1	27.2	34.1	33.5	37.1	28.2	20.0	18.1

DT43		48	48.2	34.2	37.5	34.1	34.5	33.2	43.4	46.6	46.1	48	41.3	29.3	23.2
DT44	31.6	32.4	33.2	25.4	22.7	16.6	18.8	28.6			32.7	37.2	27.9	19.8	17.8
DT45	47.3	48	50.7	49.5	40.9	31.3			44.4	50.5		54.6	46.4	32.9	29.4
DT46	38.1	39.1	41.3	33.5	30	22.7			24.2	29.9	34.8		32.6	23.2	16.0
DT47	43.9	44.2	52.2			39.4	47.1	39.7	40.9	44	49.4	43.3	44.4	31.5	31.5
DT48	39.3	39	49.4	38.9	39.7	37.4	47.6	37.9	39.3	40.5	46.8	40.9	41.4	29.4	29.4
DT49	45.6	43.1	47.9	41.5	40.5	36.1	47.2		38.1	44.1	49.7	40.2	43.1	30.6	30.6
DT50	31.6	40	37.7	37.7	33.9	31.5	33.9	29.6	31.1	34.8	41.5	39.8	35.3	25.0	22.3
DT51	34.5	35.7	33.3	27.8	20.5	21.8	26.9	29.6	29.9	30.8	34.3	38.5	30.3	21.5	18.5
DT52	33.7	40.4					26.6	24.8	29.2	35.2	38.4	36.1	31.0	22	15.3
DT53	40.8	39.3	34.8	38.5	33.6	27.4	38.4	35.9	35.2	41.7			36.6	26.0	17.1
DT54	33.7		35	33.5	28.9	25.5	30		29.4	35.2	37.4	39.7	32.8	23.3	17.0
DT55	42.8	37.7	23.7	27.6	22.2		19.9	25.8	26.6	35.9	41.3	39	31.1	22.1	16.8
DT56	39.9	39.5	41.8	27.6	29.8	25.8	30.1	27.3	25.8	33.8	33.8	41.3	33.0	23.5	17.9
DT57	37.5	41.5	49	44.8		28.4	43.9	42.3	45	44.1	46.1	48.2	42.8	30.4	21.6
DT58	45.4	47.4	48.4	38	35	36.5	43.1		47.5	47.3	41.4	54.9	44.1	31.3	22.1
DT59				20.9	15	12.9	19.5	19.7	21.9	27.8	30.5	26.4	21.6	15.4	13.3
DT60	x	x	x	33.5	28.3	23.8	27.1	28.5	32.1	37.5	36.2	40.2	31.9	22.7	15.8
DT61	x	x	x	40.9	39.9	29.3	43.5	41.3	46.4	46.6	67.7	61.6	46.4	32.9	23.3
DT62	x	x	x								35.4	38.3	36.9	26.2	26.2
DT63	x	x	x	35.7		42.3	43.4	42.8	50.2	54.3	30.1	50.1	43.4	31.0	-
DT64	x	x	x	35.1		24.6			30.5	39.3	43.1	42.7	33.3	24.0	18.7
DTS1	33.7	43.6	40.5	31.3	26.7	28.4	31.7		21.5	34.7	39.6	36.8	33.5	23.8	15.4
DTS2	49.1	45.6	36.7	42.3	38.4	33.7	42	35.4	45.6	48.5	42.8	47.5	42.3	30.0	18.8
DTS3		27.7	27.4	25	17.4	16.8	17.9	20	25.4	31.6	32.5	31.7	24.9	17.6	13.1
DTS4	28.5	28.6	35	20.4	16.7	14.4	17.1	18.6	19.4	27.5	32.9	29.5	24.1	17.1	14.3
DTS5	40.9	34.8	35.4	30.5	20.5	19.8	27.7	24	28	35	42	36	31.2	22.2	14.1

DTS6	37.1		27	30.6	29.3	26.3	26.2	22.2	27	34.2	30.6	35.9	29.7	21.1	14.2
DTS7	41.7	43	36.8	32.9	36.5	34.7	34.3	32.5	33.4	35.9	35.8	34.4	36.0	25.6	15.5

☒ Local bias adjustment factor used

☐ National bias adjustment factor used

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

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

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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

(2) Distance corrected to nearest relevant public exposure.

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

Automatic Monitoring sites - QA/QC

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 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). The sites are serviced every six months. Our service provider changed in 2018 from Enviro Technology Services plc (ET) to 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.

Non-Automatic Monitoring Sites

Nitrogen Dioxide

QA/QC

Socotec UK Ltd (formerly ESG) 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 autoanalyser with ultraviolet detection. Socotec UK Ltd, Didcot is one of the laboratories that follows the procedures set out in the Harmonisation Protocol and is rated as 'Good' under the WASP scheme.

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 NO₂ 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.

Bias Adjustment

The results are bias-adjusted using a locally derived co-location factor. For 2018 this is 0.71 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 typically used as it is more representative of the local situation compared with the national factor.

Annualisation

The annualisation calculations for sites with low data capture during 2018 are presented below. All automatic monitors achieved over 75% data capture.

There were three tubes that required annualisation due to low data capture. Annualisation was based on the Oaktree Avenue (DT37) urban background tube as neither the Latham Road Background (DT11) or Cockburn Street urban background (DT36) tubes had 100% data capture.

Station Road 2 (DT52)

Data Capture – 8 months (66%)

	Oaktree Avenue	Station Road 2	Oaktree Avenue
January	22.7	33.7	22.7
February	23.3	40.4	23.3
March	25.4		
April	20.4		
May	13.9		
June	11.9		
July	15.5	26.6	15.5
August	17.2	24.8	17.2
September	22.3	29.2	22.3
October	26.8	35.2	26.8
November	25.3	38.4	25.3
December	29.3	36.1	29.3
Average	21.16666667	33.05	22.8
Am/Pm	0.928362573		
Estimated Annual Mean	30.68238304		
Bias adjusted	22		

Low data capture is due to missing tubes

Station Square (DT63)

Data Capture – 8 Months (66%)

	Oaktree Avenue	Station Square	Oaktree Avenue
January	22.7		
February	23.3		
March	25.4		
April	20.4	35.7	20.4
May	13.9		
June	11.9	42.3	11.9
July	15.5	43.4	15.5
August	17.2	42.8	17.2
September	22.3	50.2	22.3
October	26.8	54.3	26.8
November	25.3	30.1	25.3
December	29.3	50.1	29.3
Average	21.16667	43.6125	21.0875
Am/Pm	1.003754		
Estimated Annual Mean	43.77623		
Bias adjusted	31		

The low data capture is due to this being a new tube in the network and only being in place for 8 months.

Park Street (DT64)

Data Capture – 6 Months (50%)

	Oaktree Avenue	Park Street	Oaktree Avenue
January	22.7		22.7
February	23.3		23.3
March	25.4		
April	20.4	35.1	
May	13.9		
June	11.9	24.6	
July	15.5		15.5
August	17.2		17.2
September	22.3	30.5	22.3
October	26.8	39.3	26.8
November	25.3	43.1	25.3
December	29.3	42.7	29.3
Average	21.16667	35.88333	22.8
Am/Pm	0.928363		
Estimated Annual Mean	33.31274		
Bias adjusted	24		

The low data capture is due to this tube being new to the network so only being in place for 6 months.

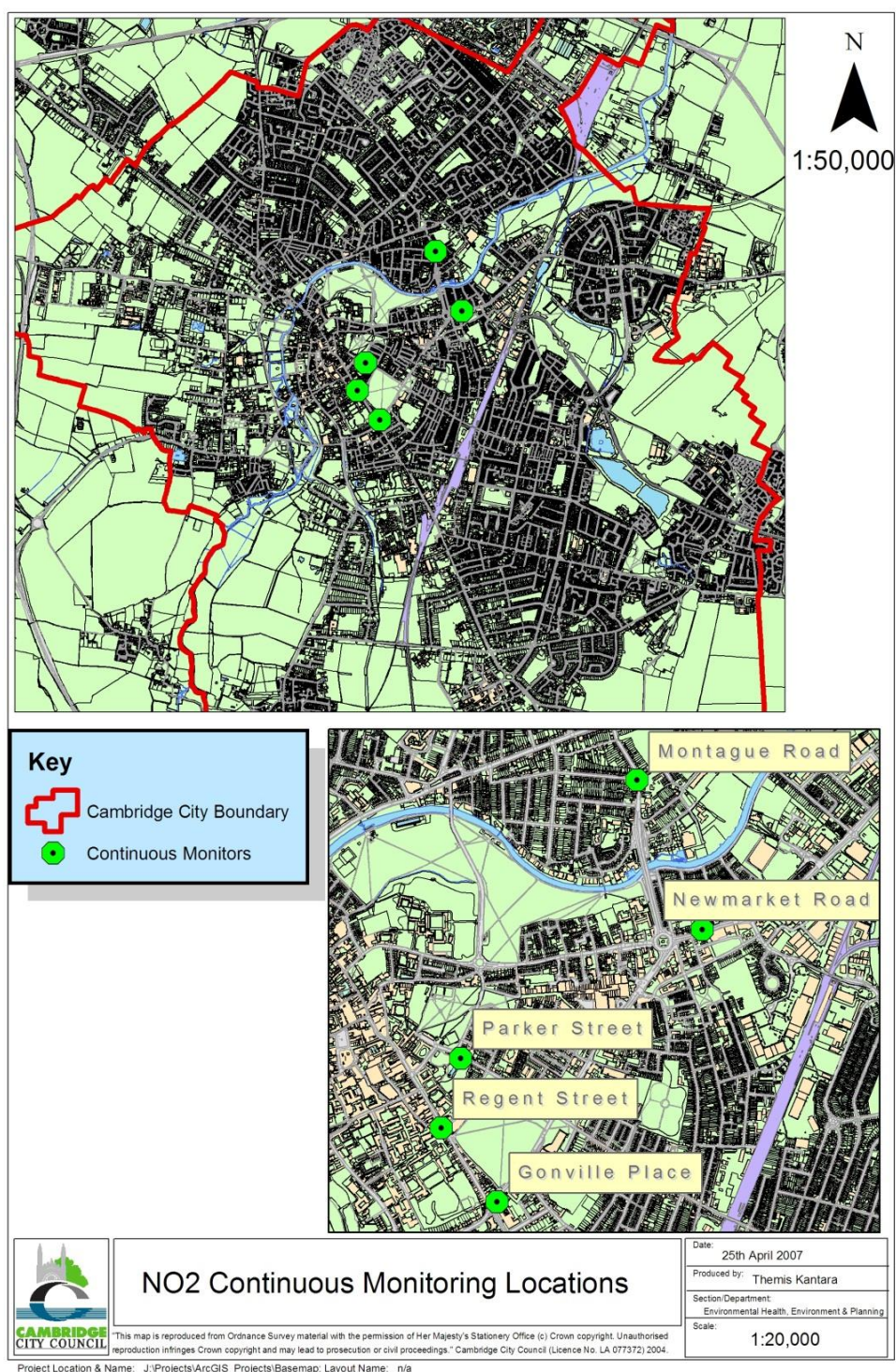
Benzene

QA/QC

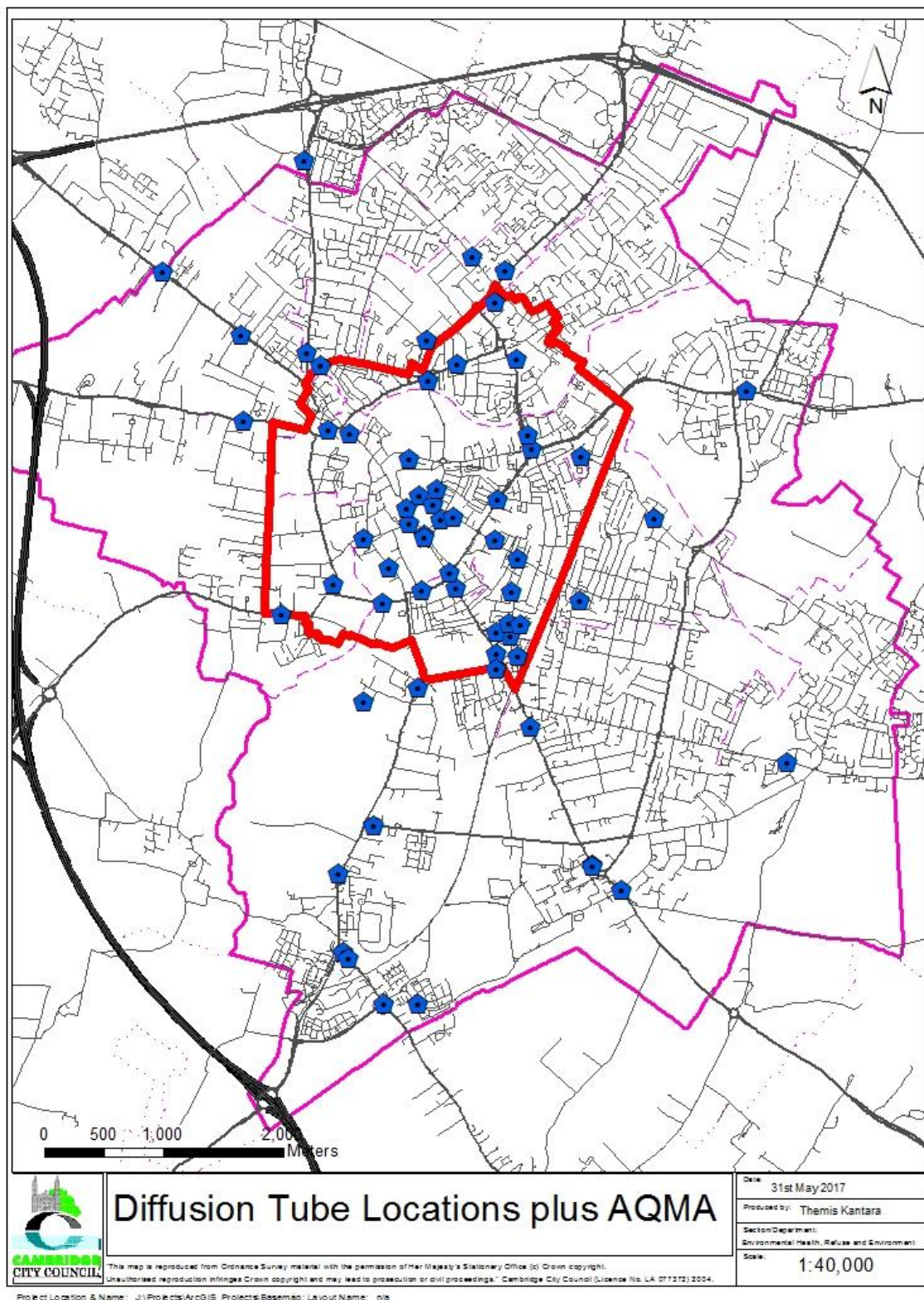
Cambridge City Council has measured benzene at Cambridge Roadside on behalf of the national monitoring network since February 2008. Tubes are changed fortnightly by the LSO. Data is collected by Ricardo AEA.

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

Map of the continuous monitoring locations. These are all in central Cambridge, within the AQMA.



Map of the diffusion tube locations, showing relationship to the Air Quality Management Area



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ¹⁵	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

¹⁵ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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	Air quality 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 (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide