



2018 Air Quality Annual Status Report (ASR)

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

August 2018



Cambridge City Council

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Front page image: Taxi charging from the rapid EV charge point, Adam and Eve car park, Cambridge

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 higher than the legal limits. 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 2017

The trends noted from the recorded levels of air pollution in 2017 indicate that 2017 was a good year for air quality with levels of nitrogen dioxide air pollution lower at most of the measuring sites than in previous years. Some sites have recorded significant drops in measured levels, particularly in the inner city. We are uncertain at the time of writing why these significant drops have occurred, and we do not know if they will be maintained in future years. Traffic levels are broadly similar to recent years; meteorology may have been a reason, or it may be possible that vehicle emissions are now declining as vehicles with new Euro standards come into the fleet. However, if the latter cause were the case, then these significant falls in levels of nitrogen dioxide would be expected across the UK. Our understanding to date is that has not been the case.

On the other hand, recorded levels of particulate matter in 2017 have fallen slightly (PM₁₀) or remained the same (PM_{2.5}).

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

The measurements from 2018 will demonstrate if low nitrogen dioxide levels continue and if this trend is maintained.

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 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 2010² to Particulate Air Pollution, compared with 34 from Road Traffic Accidents³. 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.

We have developed a new Air Quality Action Plan in 2017 with the County Council, Public Health England 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:

² This is the latest data available.

³ 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>

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

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

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

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

Actions already underway in 2017 include:

- New policies and incentives requiring a shift to ultra-low and zero emission taxis were unanimously approved at Licencing Committee in March 2018⁴ and are as follows:
 - A licence fee exemption for zero emission vehicles from 1st April 2018.
 - A licence fee discount for ultra-low emission vehicles from 1st April 2018.
 - An extended age limit for zero emission vehicles from 1st April 2018.
 - An extended age limit for ultra-low vehicles from 1st April 2018.
 - A set date for all new Licensed Saloon vehicles to be ultra-low or zero emission from 1st April 2020.
 - A set date for all Licensed Saloon Vehicles to be ultra-low or zero emission from 1st April 2028.

⁴ <https://democracy.cambridge.gov.uk/ieListDocuments.aspx?CId=180&MId=3300&Ver=4>

- To reduce the total number of Wheelchair Accessible Vehicles within the Hackney Carriage Fleet from 65% to 50% (213 to 163) and those 50 plates to be replaced by zero emission vehicles.
- A date to be set for all Wheelchair Accessible Vehicles to be ultra-low or zero emission as and when the market allows by December 2018.
- To restrict City Centre Access to ultra-low and zero emission Licensed Vehicles only by December 2028.

The above changes will ensure a rapid but fair transition to Plug in Hybrid and fully electric taxis within ten years, significantly reducing polluting emissions in the city centre where taxis currently account for 11% of nitrous oxides emissions.

- £426,000 awarded by the Office for Low Emission Vehicles and £200,000 of City Council and GCP capital has been committed to deliver a network of 21 Fast and Rapid Electric Vehicle Chargers by 2020, to support the taxi trade in this transition.

The first two charge points have been installed at Adam and Eve Car Park with a further six planned at Castle Hill Car Park, Arbury Court Car Park and on street at Newmarket Road by September 2018. Further sites are being identified across the city for the installation of the other 13 charge points.

- A Clean Air Zone Feasibility Study has been commissioned. The work will report back through the GCP in September 2018.
- Smart Cambridge (a project jointly undertaken by Cambridge City and Cambridgeshire County Councils and GCP) has recently launched an app to assist people with getting around Cambridge using walking, cycling, buses and trains. The app also allows users to view real time travel information. It is hoped the app will also be able to show live information regarding air quality in the future. In addition Smart Cambridge has also introduced a series of digital way finding hubs across the city.
<http://www.connectingcambridgeshire.co.uk/smartcamb/>
- A10 Royston to Cambridge walking and cycling route completed.

- Two new resident parking zones have been agreed, with two more set to be approved soon, and five more at the consultation stage.

The new Combined Authority of Cambridgeshire and Peterborough has recently responsibility for the Local Transport Plan, transport improvements and the bus network so will become an additional partner.

Defra Appraisal of the Air Quality Action Plan

Defra provided a detailed response to the Air Quality Action Plan (February 2018), reproduced in Appendix F. The overall appraisal is positive; Defra state that the “Plan is well presented and proportionate to the air quality problems identified. It is clear that the Council have made significant progress in developing and reviewing measures in previous Action Plans integrated with Planning and Transport Policies at both the local and regional levels.”

Defra also comment that information on costs, funding and timescales, as well as mechanisms for prioritisation and selection of final action plan measures are not included in the Plan. It will be possible to complete the information about timescales, costs, benefits and other impacts as more information becomes available about the feasibility of the measures.

Defra would also like to see information about the co-impacts of the core measures, i.e. environmental, social or economic issues other than air quality. This work is being developed – for example, the GCP studies around the feasibility of demand management measures are considering the socio-economic impacts of each demand management measure as well as a combination of demand management measures together. The Clean Air Zone Feasibility study will also consider the socio-economic impacts of the introduction of a Clean Air Zone in Cambridge and the potential form it would take. The options set out in a recent draft report on the feasibility of low emission buses with zero emission capability consider the analysis and suitability of viable low emission bus technologies, integrated opportunities to utilise renewable energy sources, future proof the low emission bus investment,

and minimise costs and disruption, as well as the air quality improvement ambition.

Projects will continue to consider the options for costs and benefits as they are further developed during the course of this Plan.

Finally Defra comment that “the current AQAP is not integrated with the Local Transport Plan, and it is clear that future planned developments have the potential to give rise to traffic growth and increases in emissions. Ideally commitments for limits to carbon and air pollution emissions from motor vehicles should be linked to future transport plans.” The Combined Authority has recently commissioned the development of a new Local Transport Plan for Cambridgeshire and Peterborough; stakeholder discussion is anticipated in the autumn.

Conclusions and Priorities

The trends noted from the recorded levels of air pollution in 2017 indicate that 2017 was a good year for air quality with levels of nitrogen dioxide air pollution lower at most of the measuring sites. Some sites have recorded significant drops in measured levels, particularly in the inner city, but measured levels of particulate matter have fallen slightly (PM_{10}) 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 2018 is to continue with the measures already underway and start work on new measures in accordance with our AQAP
- Challenge - Future improvements in air quality are dependent on supporting the transition from internal combustion engine to low emission vehicles for both private and public fleets.
- Challenge - Air quality will continue to remain under pressure because of continued significant population, housing and business growth in and around Cambridge.

- Action - We will continue to 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 have little or no harmful impact on air quality.
- Action – We will continue to work with GCP and start to work with the new Combined Authority to support strategic transport planning and infrastructure investment.

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 stations⁵; Cambridgeshire County Council includes air quality information on its Cambridgeshire Insight information website⁶.

Cambridge City Council has engaged with decision-makers through the development of the Air Quality Action Plan 2018 – 2023. The steering group met at regular intervals to develop and produce the Plan; the group included representatives from relevant teams in the Cambridge City Council, Cambridgeshire County Council, the GCP and South Cambridgeshire District Council.

The Air Quality Action Plan is currently open for consultation⁷.

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:

⁵ <https://www.cambridge.gov.uk/air-pollution>

⁶ <https://cambridgeshireinsight.org.uk/environment/airquality/>

⁷ <https://www.cambridge.gov.uk/air-quality-action-plan-consultation>

- 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 at:
<http://www.cambridgeshire.gov.uk/info/20017/buses> .
- My Bus Trip is a useful app downloadable from this web page:
<https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/buses/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 at <https://www.cambridge.gov.uk/content/cycling-and-walking-schemes> or via the Walkit website at <http://walkit.com/cities/cambridge/>.
- 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 http://www.theaa.com/motoring_advice/fuels-and-environment/drive-smart.html.
- 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. More information is available at <https://www.cambridge.gov.uk/electric-vehicles>
- Consider living car free.
- Join a car club. Zipcar have 20 vehicles for short term use in Cambridge.
<https://www.cambridge.gov.uk/zipcar-car-club>

- 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 (<http://www.clean-air-kids.org.uk/>).

If you would like to know more about air quality in Cambridge, please visit our website at <https://www.cambridge.gov.uk/air-pollution> or contact us by phone on: 01223 457900 or by email to: eqg@cambridge.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality in Cambridge during the calendar year, 2017. It fulfils the requirements of Local Air Quality Management (LAQM), as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMA) 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 AQMA declared by Cambridge can be found in Table 2.1. Further information related to declared or revoked AQMA, including maps of AQMA boundaries are available online at:

https://uk-air.defra.gov.uk/aqma/details?aqma_id=30

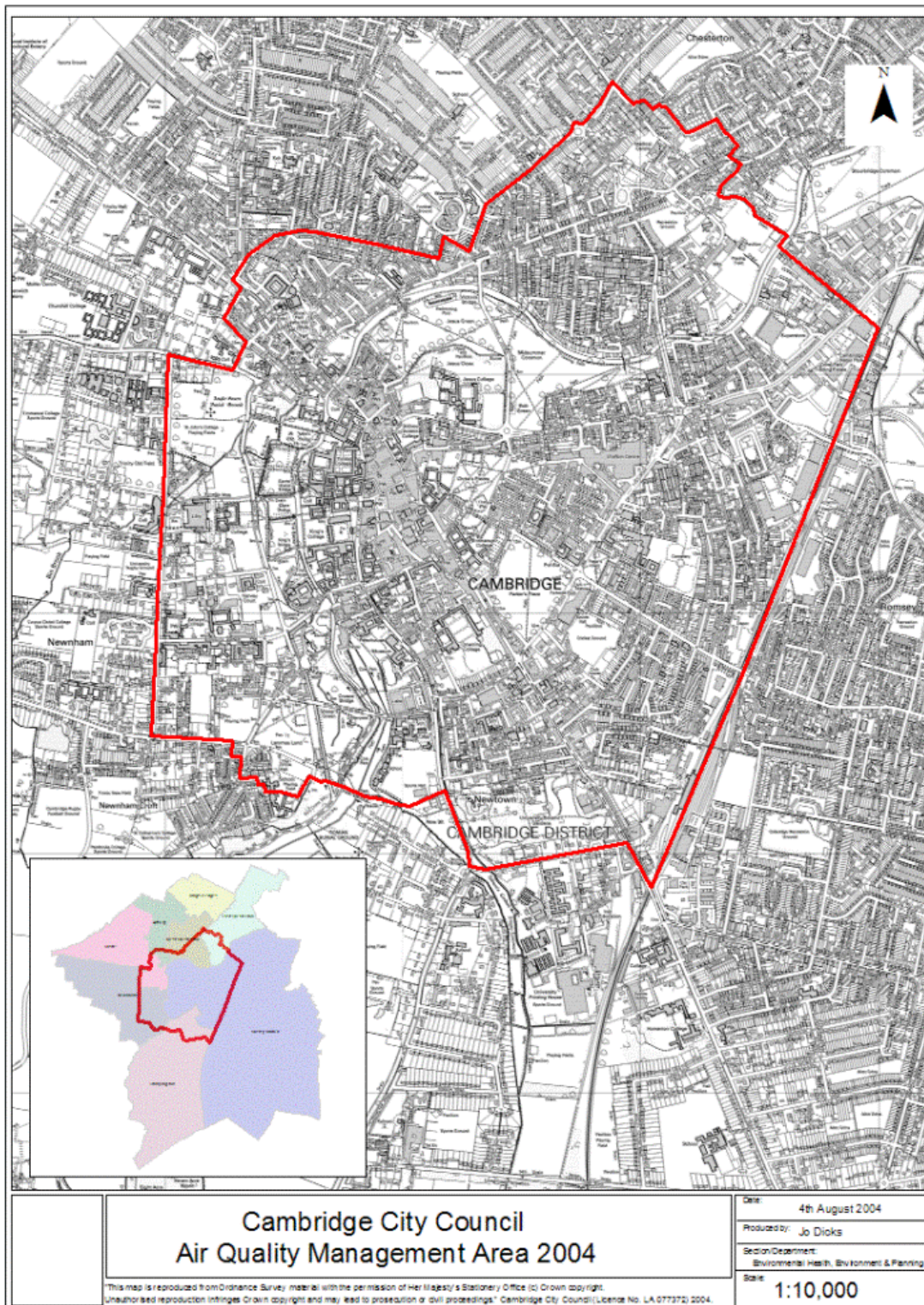


Figure 2.1 Cambridge Air Quality Management Area

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 2017	
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	37 micrograms per cubic metre continuous monitor in Parker Street 34 micrograms per cubic metre diffusion tube in Emmanuel Street 40 micrograms per cubic metre diffusion tube in Long Road (monitoring site not in place in 2004)	Action Plan, 2018 – 2023,

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

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

Cambridge City Council, Cambridgeshire County Council and the GCP have taken forward a number of direct measures during the current reporting year of 2017 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 Plan⁸. Key completed measures are:

1. Air Quality Action Plan completed in 2017 and agreed by Environment Scrutiny Committee in March 2018, following consultation with statutory consultees including Defra.
2. The taxi licensing policy was prepared in 2017 (and agreed 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.
3. Work continued on the arrangement for the installation of OLEV-funded rapid charge points for taxis, with the first installation completed in March 2018. The OLEV funded project runs for 3 years until 2019/20.
4. A Feasibility Study for a Clean Air Zone has been commissioned. Work has been ongoing, with the results of the feasibility study to be presented to the Greater Cambridge Partnership in September 2018.

Progress on these measures has been assisted by the appointment of 2 full-time employees within the City Council to work on the GCP funded projects.

The following measures are expected to be completed over the course of the next reporting year (2018/19):

1. The Feasibility Study for Clean Air Zone will be completed in the autumn and the results will be considered by the GCP and Cambridge City Council.
2. Six to twelve more Rapid Charge Points for Taxis will be installed.

⁸ <https://www.cambridge.gov.uk/media/3451/air-quality-action-plan-2018.pdf>

3. A 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 autumn 2018. The results of these modelling exercises will be used by the GCP when considering decisions to be made on proposed interventions.

The public consultation on the Cambridge Air Quality Action Plan 2018-23 runs until 18th September, 2018. All responses will be considered when the consultation closes, and acted on where helpful and possible. Any substantial changes will require a return to Environment Scrutiny Committee for approval. Any minor amendments will be noted in an amendment sheet and published on the website.

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

1. Continue with the installation of rapid charge points for taxis.
2. 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.
3. Continue to work with Public Health officers to raise awareness about the health impacts of poor air quality, including further air quality training events.
4. Continue to publicise ways to improve air quality.
5. Work on Supplementary Planning Document on air quality and development control, once the Local Plan has been approved by the Planning Inspector
6. Develop new Air Quality/ Planning policies for the Air Quality Action Plan.

Challenges

The principal challenges and barriers to implementation 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; new primary and secondary 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.

Progress on the following measures has been slower than expected.

The new Cambridgeshire and Peterborough Combined Authority and GCP have 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 project is on pause. The scheme went out for consultation on the potential routes to take including the possibility of a new busway and park and ride (P&R) site, and the results have been received. The GCP has paused some of its work for a limited time period whilst it is aligning with the Combined Authority. Work will restart during the summer.

- All measures to reduce emissions from buses and coaches have been paused – the Combined Authority is carrying out a Strategic Bus Review⁹ of commercial, subsidised and community services, which will then be fed into the new Local Transport Plan. It is envisaged that the study will provide a menu of potential options for improving the service in the medium and long term. The study will consider a broad range of factors, recognising that different areas of the Combined Authority may require different solutions.

⁹ <http://www.cambridgeshirepeterborough-ca.gov.uk/news/funding-for-strategic-bus-review-confirmed/>

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	Ongoing	Ongoing	TBC	n/a	5 P&R sites	Ongoing	More P&R due under Greater Cambridge Partnership arrangements, however GCP transport projects currently paused.
2	Quality Bus Partnerships	Alternatives to private vehicle use	Other	Camb. County Council/ Camb City Council/ Greater Cambridge Partnership	Ongoing	Ongoing	QBP agreement for current services and QBP agreements for all new services	No additional pollution	QBP agreement for current services pending; QBP agreements for new services accepted in principle	Ongoing	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	Ongoing	http://www.travelcambs.org.uk/car-share/
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	n/a	n/a	16 cars and 1 van in Zipcar club across Cambridge	Ongoing	GCP, County and University working with suppliers to increase the offer in Cambridge.

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
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	n/a	n/a	16 cars and 1 van in Zipcar club across Cambridge	Ongoing	As above
6	Require car clubs in new developments via planning policy/ planning condition/ S106 agreements	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	Forward-thinking developers are already setting aside car club spaces.
7	Require 1 car club vehicle per 100 parking spaces in new residential development, 1 vehicle per 5,000 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	Forward-thinking developers are already setting aside car club spaces. Require where appropriate to mitigate air quality impact.
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	-	-	Nothing in place at the moment.

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
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	-	-	Nothing in place at the moment. Will need to complement existing cycle parking requirements and space implications. Will need to consider if access is open or restricted.
10	Develop policies to promote electric bike charge facilities in workplaces and car parks/ require in new workplaces	Alternatives to private vehicle use	Other	Environmental Health and Planning, Camb. City Council/ district councils	-	-	n/a	n/a	-	-	Nothing in place at the moment. Will need to complement existing cycle parking requirements and space implications. Will need to consider if access is open or restricted.

Cambridge City Council

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
11	No measure proposed	Environmental Permits	Introduction/ increase of environmental charges through permit systems and economic instruments	Camb. City Council	-	-	-	-	-	-	Not applicable in Cambridge. These charges are fixed by Defra.
12	No measure proposed	Environmental Permits	Introduction/ increase of environmental funding through permit systems and economic instruments	Camb. City Council	-	-	-	-	-	-	Not applicable in Cambridge. These charges are fixed by Defra.
13	No measure proposed	Environmental Permits	Large Combustion Plant Permits and National Plans going beyond BAT	Camb. City Council	-	-	-	-	-	-	Not applicable in Cambridge

Cambridge City Council

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
14	No measure proposed	Environmental Permits	Measures to reduce pollution through IPPC permits going beyond BAT	Camb. City Council	-	-	-	-	-	-	Not applicable in Cambridge
15	Tighter Emission Limit Values for Medium Combustion Plant located in AQMA	Environmental Permits	Other measures through permit systems and economic instruments	Environmental Health, Camb. City Council	under discussion	-	-	-	-	-	Where applicable
16	No measure proposed	Environmental Permits	Tradeable permit system through permit systems and economic instruments	Camb. City Council	-	-	-	-	-	-	Not applicable in Cambridge
17	Last Mile delivery based from P&R sites	Freight and Delivery Management	Delivery and service plans	GCP/ Camb. County Council	Under discussion	-	-	-	-	-	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	-	-	-	-	-	Useful for commuters
19	Unified Consolidation Centres	Freight and Delivery Management	Freight partnerships for city centre deliveries	GCP/ Camb. County Council	Under discussion	-	-	-	Under discussion	-	Initial phase

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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
20	City Centre restrictions	Freight and Delivery Management	Quiet and Out of Hours delivery	Camb. County Council	In place	In place	n/a	n/a	Complete	Ongoing	HGV not permitted in Cambridge Core Area 10 - 4
21	No measure proposed	Freight and Delivery Management	Route Management Plans	Camb. County Council	-	-	-	-	-	-	Nothing in place at the moment
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	Outspoken Delivery (Cambridge) use specialist cargo-bikes and Electric vehicles. Deliveroo use cycle deliveries 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 considered during 2019	Implementation start upon Local Plan adoption	Air Quality policies in joint Local Plan	n/a	Discussion phase	TBC	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	Complete	Implementation starts upon Local Plan adoption	n/a	n/a	Local Plans currently being examined	Ongoing from adoption of Local Plan	City and SCDC have separate Local Plans with Planning Inspector.

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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
25	Adopt/ revise	Policy Guidance and Development Control	Low Emissions Strategy	Environmental Health/ Planning Joint team City/SCDC	2018	2020	Completion of new LES	-	In discussion	TBC	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'
26	Supplementary Planning Documents	Policy Guidance and Development Control	Air quality Planning and Policy Guidance	Environmental Health/ Planning Joint team City/SCDC	2017	2018 onwards	Input into production of Sustainable Construction and Development SPD	n/a	In preparation	2018	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	2018 onwards	Update of Air Quality in Cambridge: Developers Guide	n/a	Not yet started	2019	To provide clarity for developers. To be updated as required.
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	2018 onwards	Production of new guidance to support Policy 36	n/a	Under discussion	2019	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	Sustain-able Procurement Guidance.	Policy Guidance and Development Control	Sustainable Procurement Guidance	District councils City/SCDC	In place	In place	n/a	n/a	Complete	Ongoing	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	-	-	-	TBC	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 discussion	Ongoing	-	-	-	Ongoing	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	-	-	In place	Ongoing	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
33	Require one slow EV Charge Point for each dwelling with allocated parking (100% coverage)	Policy Guidance and Development Control	Other	Environmental Health/Planning	In Progress	Upon adoption of AQAP	-	n/a	Forward-thinking developers are already installing EV charge points.	n/a	In line with NPPF, IAQM guidance and to be incorporated into building regulations. Recommended /require where appropriate to mitigate air quality impact
34	Require one slow EV Charge Point for two dwelling with communal parking (50% coverage)	Policy Guidance and Development Control	Other	Environmental Health/Planning	In Progress	Upon adoption of AQAP	-	n/a	Forward-thinking developers are already installing EV charge points.	n/a	In line with NPPF principle and IAQM guidance Recommended/require where appropriate to mitigate air quality impact
35	Require one fast EV Charge Point for 1,000m ² non-residential floor space	Policy Guidance and Development Control	Other	Environmental Health/Planning	In Progress	Upon adoption of AQAP	-	n/a	Forward-thinking developers are already installing EV charge points.	n/a	In line with NPPF principle and IAQM guidance Recommended/require where appropriate to mitigate air quality impact
36	Require one rapid EV Charge Point for 1,000m ² non-residential floor space	Policy Guidance and Development Control	Other	Environmental Health/Planning	In Progress	Upon adoption of AQAP	-	n/a	Forward-thinking developers are already installing EV charge points.	n/a	In line with NPPF principle and IAQM guidance Recommended/require where appropriate to mitigate air quality impact

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	District Councils – shared planning policy team	In discussion	Upon adoption of AQAP	n/a	n/a	Informally in place as and when required for mitigation, via planning condition	2018	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	District Councils – shared planning policy team	In discussion	Upon adoption of AQAP	n/a	n/a	Informally in place as and when required for mitigation, via planning condition	2018	All developments to have low NOx boilers, defined as boilers that meet a dry NOx emission rating of 40mg/kWh.
39	No measure proposed	Promoting Low Emission Plant	Low emission fuels for stationary and mobile sources in public procurement	-	-	-	-	-	-	-	Nothing in place at the moment
40	No measure proposed	Promoting Low Emission Plant	Other measures for low emission fuels for stationary and mobile sources	-	-	-	-	-	-	-	Nothing in place at the moment

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
41	No measure proposed	Promoting Low Emission Plant	Public Procurement of stationary combustion sources	-	-	-	-	-	-	-	Nothing in place at the moment
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	Not at present	-	-	-	-	-	Not being considered - high cost and workload, for minimal impact See also Public Information
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	Not at present	-	-	-	-	-	Not being considered - regulations already in place to cover fuel use and smoke nuisance See also Public Information
44	No measure proposed	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	-	-	-	-	-	-	-	Nothing in place at the moment
45	No measure proposed	Promoting low emission transport	Company vehicle procurement	-	-	-	-	-	-	-	Councils unable to directly influence private business but can use access policies to incentivise change.

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
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 in progress	2019	See text
47	LEV discount offered as part of policy for residents parking permits	Promoting low emission transport	LEV priority parking	Cambs County Council	At committee stage	2018	Discount offered on residents parking permits to Low Emission Vehicles	n/a	Consultation in progress	2019	-
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	Installation of 18 Rapid and 3 Fast EV chargepoints in Cambridge and South Cambridgeshire	1.5 – 4.5% reduction in NOx emissions	TBC First phase plans under way	2020	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 6 EV chargepoints in residential parking zones	n/a	Funding bid about to be submitted	2018	Will depend if funding bid is successful from OLEV
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	-	-	Some EV already in car parks Would require additional staff and funding to initiate new projects

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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	-	-	n/a	n/a	-	-	Consider as part of overall strategy to enable EV uptake
52	No measure proposed	Promoting low emission transport	Public vehicle procurement	Camb County Council	-	-	n/a	n/a	-	-	Nothing in place at the moment
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	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	-	See text
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	2 EV and 30 petrol hybrid taxis	-	See text

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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
56	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	35% bus journey kilometres E6 in Cambridge Core Area	-	EV buses being considered
57	Home-working policies	Promoting Travel Alternatives	Encourage and facilitate home working	TfC Camb County Council Camb City Council	Ongoing	Ongoing	-	n/a	In place	ongoing	To reduce the need to travel to work
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	-	-	Nothing specific in place at the moment
59	Travel for Cambridge-shire	Promoting Travel Alternatives	Personalised Travel Planning	Camb County Council	Ongoing	Ongoing	n/a	n/a	Not recorded.	Ongoing	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	In discussion	Winter 2017/2018	Adoption of new Travel Plan	n/a	-	Winter 2017/2018	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	-		Discounts available for TfC partners

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
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	-	-	To be carried forward to future Local Plans, with standards reviewed where appropriate.
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	Ongoing	Ongoing	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	https://www.cambridge.gov.uk/sites/default/files/docs/CycleParkingGuide_std.pdf
65	Schemes and grants	Promoting Travel Alternatives	Promotion of Cycling	Camb City Council/ Camb. County Council/	Ongoing	Ongoing	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	-	-	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	Not recorded.	Ongoing	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	Ongoing	Ongoing	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	Ongoing	Ongoing	<p>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.</p> <p>The aim is to implement effective travel initiatives that promote cycling, walking, public transport and car sharing to work.</p>
70	Cambridge Matters magazine	Public Information	Leaflets	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	Ongoing	Ongoing	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	As required

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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	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	As required
74	Website	Public Information	Internet	Environmental health and Media Team, Camb City Council	Ongoing	Ongoing	n/a	n/a	Ongoing	Ongoing	Plenty of information and updates on the City Council website ¹⁰
75	Publicity campaign	Public Information	Other	Environmental health and Media Team, Camb City Council	In discussion	2018 onwards	n/a	n/a	n/a	-	Ongoing campaign to provide information about air quality and actions
76	Cam-paigns 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	-	Prepare and disseminate information about health impacts
77	Text Alerts when air quality is poor	Public Information	Other	Environmental health, Camb City Council, PH Camb County Council	In discussion	2018 onwards	n/a	n/a	n/a	-	Will require resource to set up

¹⁰ <https://www.cambridge.gov.uk/air-pollution>

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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	Defra have recently produced information leaflets; these are available from the website and publicised 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	-	Ongoing	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	-	-	Would need additional resource for enforcement. Additional by-laws may be required.
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	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	Will further limit commuter traffic
83	Congestion charging or road user	Traffic Management	Road-User charging/ congestion zones	Infrastructure Team, Camb County Council, Greater Cambridge Partnership	Not currently under discussion	TBC	n/a	-	-	-	Demand Management work being undertaken by GCP

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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
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	TBC	County/City/ GCP scheme.
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	County/City/ GCP scheme. Also see Transport and Planning Infrastructure
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	County/City/ GCP scheme.
87	No measure proposed	Traffic Management	Testing vehicle emissions	-	-	-	-	-	-	-	Not required.
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	Report due	n/a	GCP study to review existing infrastructure and consider future technology which may improve traffic flow and reduce idling, and could include bus prioritisation.

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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
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	County/City/ GCP scheme.
90	No new measures planned	Traffic Management	Parking enforcement	Camb County Council	In place	In place	n/a	n/a	n/a	Ongoing	No further action required unless the civil enforcement team take up penalty notices for idling.
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	County/City/ City Deal scheme. A1307 Three Campuses/ Cambourne to Cambridge/Histon Road/Milton Road/City Access
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	County/City/ City Deal scheme. A10 Royston to Cambridge/A1307 Three Campuses/ Cambourne to Cambridge/Histon Road/Milton Road/City Access/Chisholm Trail/Cross City Cycling/Greenways project

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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	County/City/ City Deal scheme. A10 Royston to Cambridge/A1307 Three Campuses/ Cambourne to Cambridge/Histon Road/Milton Road/City Access/Chisholm Trail/Cross City Cycling/Greenways project
94	Bike Hire schemes	Transport Planning and Infrastructure	Cycle hire scheme		In place	n/a	n/a	n/a	n/a	n/a	Ofo and Mobike are trialling bike hire schemes in Cambridge. This is viable without intervention from local authorities.
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	TBC	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	TBC	Greater Cambridge Partnership,
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	Unlikely to be completed in the lifetime of this Plan but important for future.

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
98	No measure proposed	Vehicle fleet efficiency	Driver training and ECO aids	-	-	-	-	-	-	-	Nothing in place at the moment
99	No measure proposed	Vehicle fleet efficiency	Fleet efficiency schemes	-	-	-	-	-	-	-	Nothing in place at the moment
100	No measure proposed	Vehicle fleet efficiency	Promoting Low Emission Public Transport	-	-	-	-	-	-	-	Nothing in place at the moment
101	No measure proposed	Vehicle fleet efficiency	Vehicle retrofitting	-	-	-	-	-	-	-	See under public transport improvement
102	Improve air quality by increasing tree cover	-	-	Camb City Council	In discussion	TBC	-	-	Part of arboricultural policy to increase canopy cover.	TBC	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}¹¹ (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:

¹¹ Annual Status Report,
<https://democracy.cambridge.gov.uk/ieListDocuments.aspx?CId=177&MIId=2570&Ver=4>

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

No changes were made to the monitoring network during 2017. All automatic monitors achieved data capture above 75% and only three diffusion tubes required annualisation. We continue to review locations of diffusion tubes but at this time did not consider it necessary to make any changes or add any additional tubes.

The results in 2017 show either a stable or decreasing trend for levels of NO₂ both inside and outside the AQMA. Both PM₁₀ and PM_{2.5} levels have remained typically stable. 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 2017. 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>.

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 63 sites during 2017. Table A.2 in Appendix A shows the details of the sites.

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

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

The results for 2017 typically show a decrease both inside and outside the AQMA with some exceptions, which are discussed below.

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.

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.

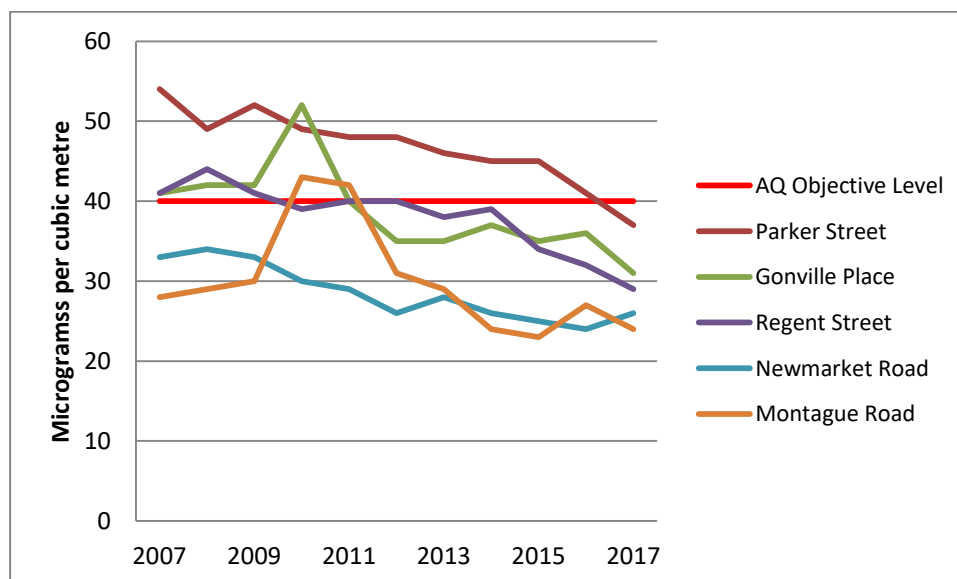


Figure 3.1 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Sites

No hourly exceedences were recorded in 2017.

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 2017 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 $40\mu\text{g}/\text{m}^3$.

No automatic monitoring sites exceeded the AQ objective annual mean concentration of $40\mu\text{g}/\text{m}^3$ in 2017 with four of the five sites recording a decrease. There was a small increase at Newmarket Road but air pollution levels here remain well below the national air quality objective.

Cambridge City Council had 65 diffusion tubes located at 63 locations (triplicate at Gonville Place) across the city in 2017. Of the 63 locations (60 tubes recorded a decrease, 2 recorded no change and 1 recorded an increase.

The tube which saw an increase is Great Northern Road (DT57). This is one of the tubes introduced in 2016 to monitor air quality around the station area as an area of major development. At the time this tube was installed the road was not fully open. The rise in recorded levels reflects the road being fully open to traffic late 2016. Although the recorded level fell from 2016 Long Road (DT6) is the only location to measure a level above the $40\mu\text{g}/\text{m}^3$ objective in 2017; however it has no nearby relevant receptors. Estimated levels at the nearest receptor is $18\mu\text{g}/\text{m}^3$ (Table B1). This tube is located outside the AQMA and was put up to monitor changes in air quality along this frequently congested road close to Addenbrooke's hospital.

Both Background and Urban background sites 2017 showed a marked decrease following a small increase for the previous four years.

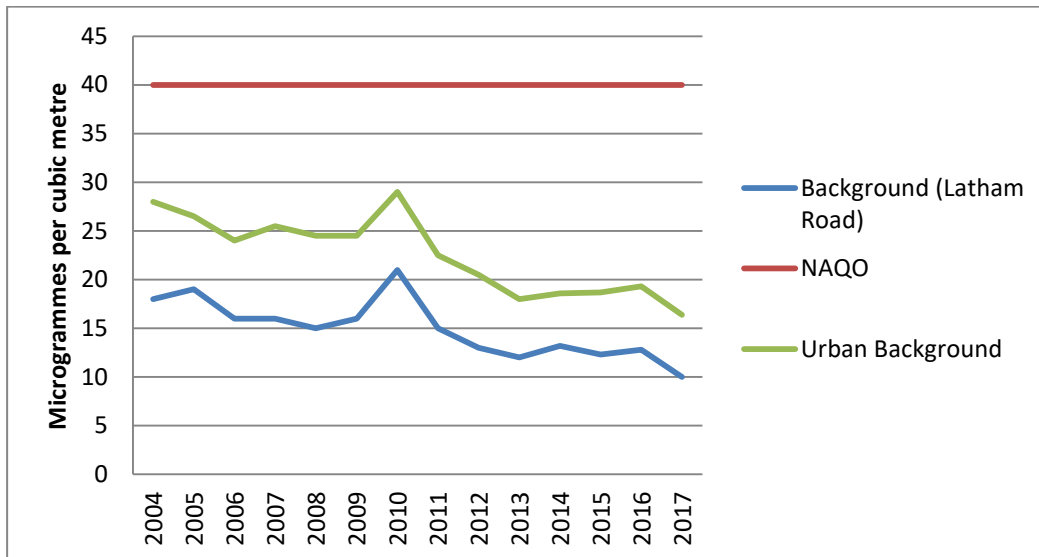


Figure 3.2 Trend in averaged mean annual NO₂ for Background and Urban background sites

The trend data for the Radial Roads, Inner Ring Road and Inner City Streets have continued downwards with a more marked drop in 2017 compared with previous years. This is particularly noticeable in the Inner City Streets. The recorded fall in the Inner City Streets could be related to the introduction of an Automatic Number Plate Recognition system at the beginning of 2017 to enforce access eligibility. Anecdotal evidence has suggested that bus movements have been made easier in the historic city centre with its narrow congested streets.

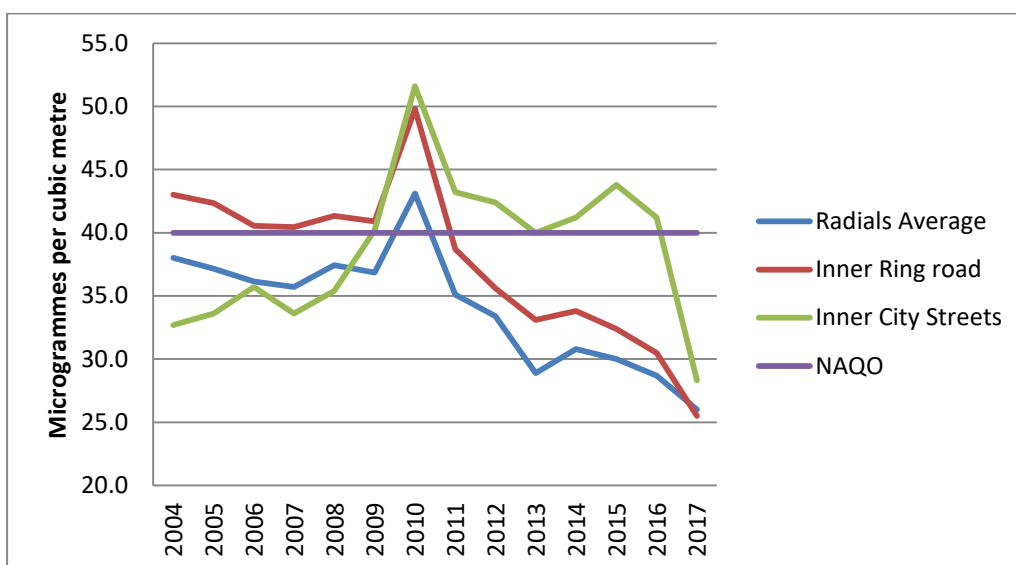


Figure 3.3: Trend in averaged mean annual NO₂ for Radial Roads, Inner Ring Road and Inner City Streets

The roads around the bus station all recorded a decreased level in 2017 compared with 2016.

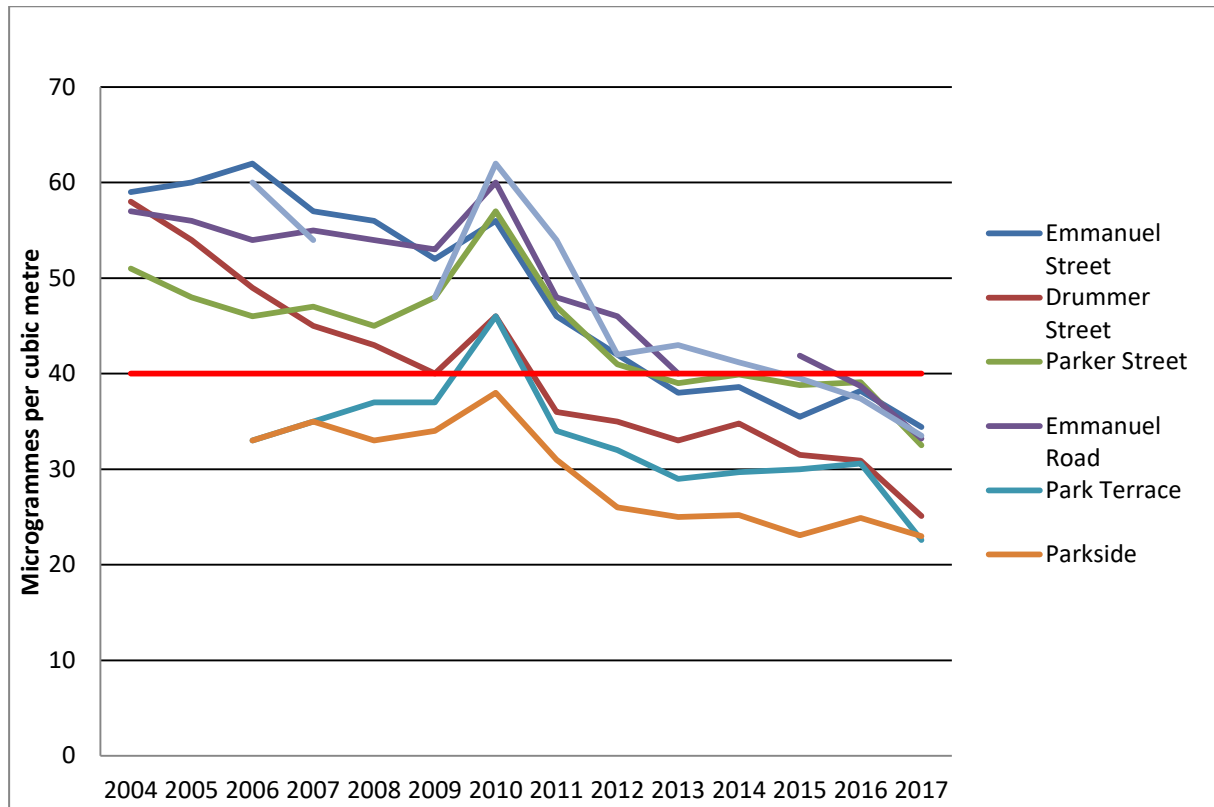


Figure 3.4: Trend in averaged mean annual NO₂ for Bus Station area

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 all recorded a decrease compared with 2016 with the exception of Great Northern Road (DT57). Great Northern Road diffusion tube was installed in 2015; at this time the road was not fully open to traffic. The road was fully opened in November 2016; therefore 2017 is the first representative year with a full set of data.

Both of the Station Road tubes and Station Place show a marked decrease compared with 2016, when traffic was diverted into Great Northern Road.

The automatic monitor saw a small increase in recorded levels although it remains well below the objective level. 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.

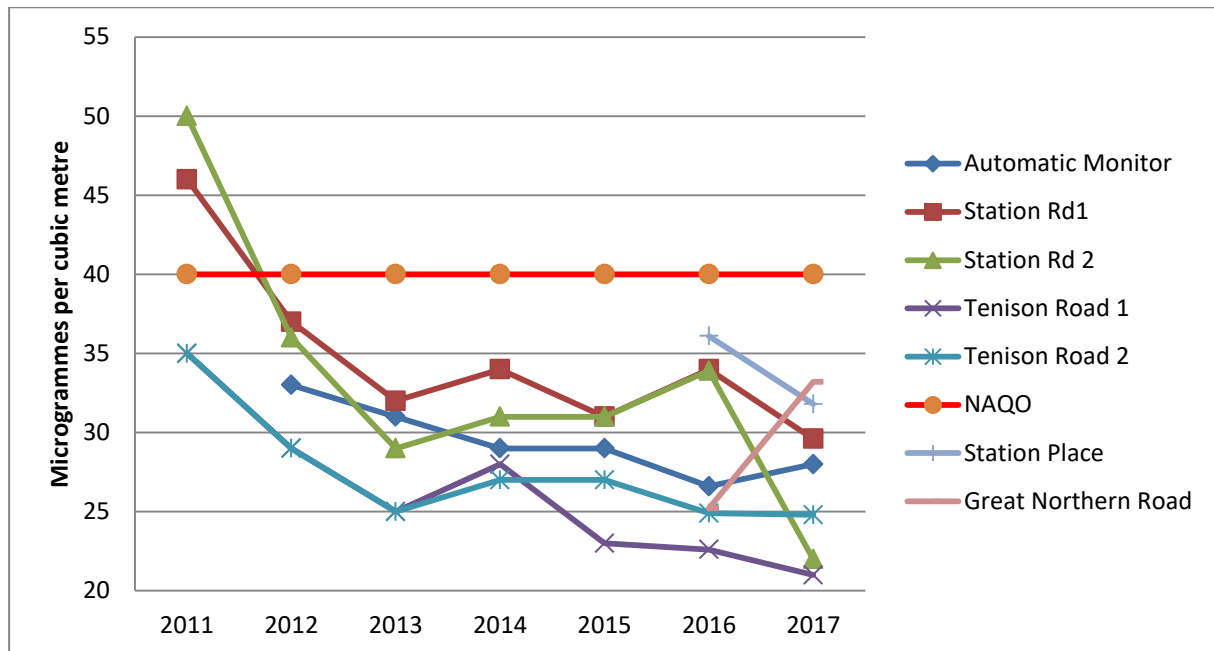


Figure 3.5: Trend in averaged mean annual NO₂ for CB1

Southern Cambridge is another area which is undergoing extensive development. Recorded air pollution levels in 2017 are lower compared with 2016. We will continue to monitor the NO₂ levels in this part of the city as development continues.

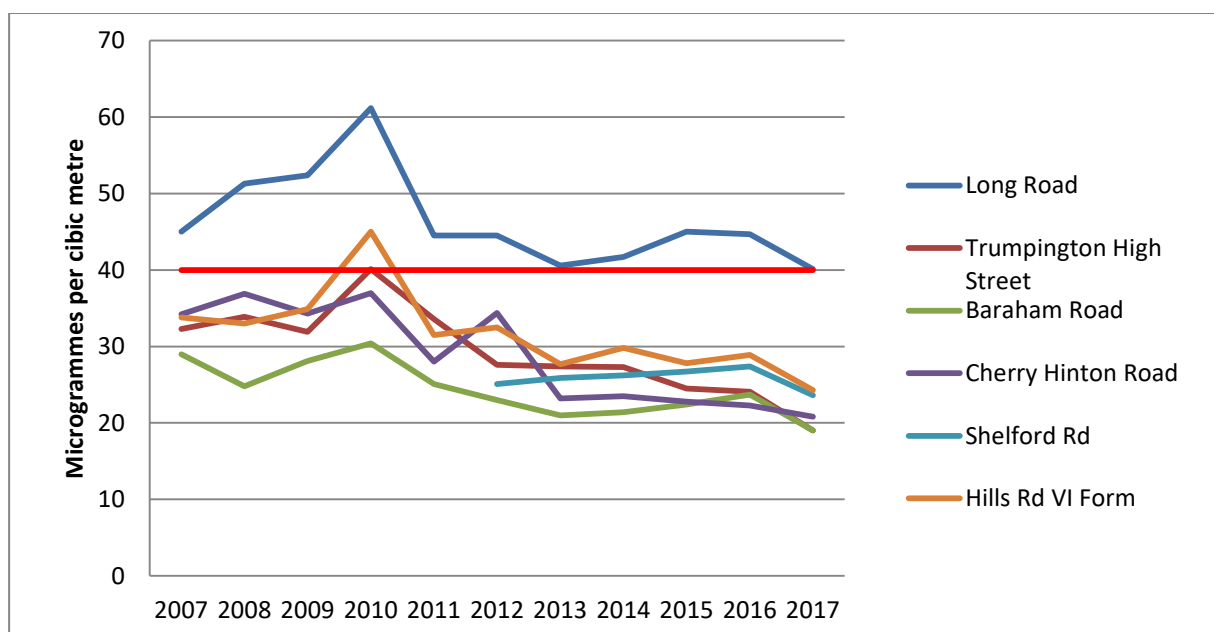


Figure 3.6: Trends in averaged mean annual NO₂ in Southern Cambridge

3.2.2 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Table A.6 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 decreased slightly at all sites. This continues the stable or slight decrease seen in 2016 following a small increase in 2015. 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.

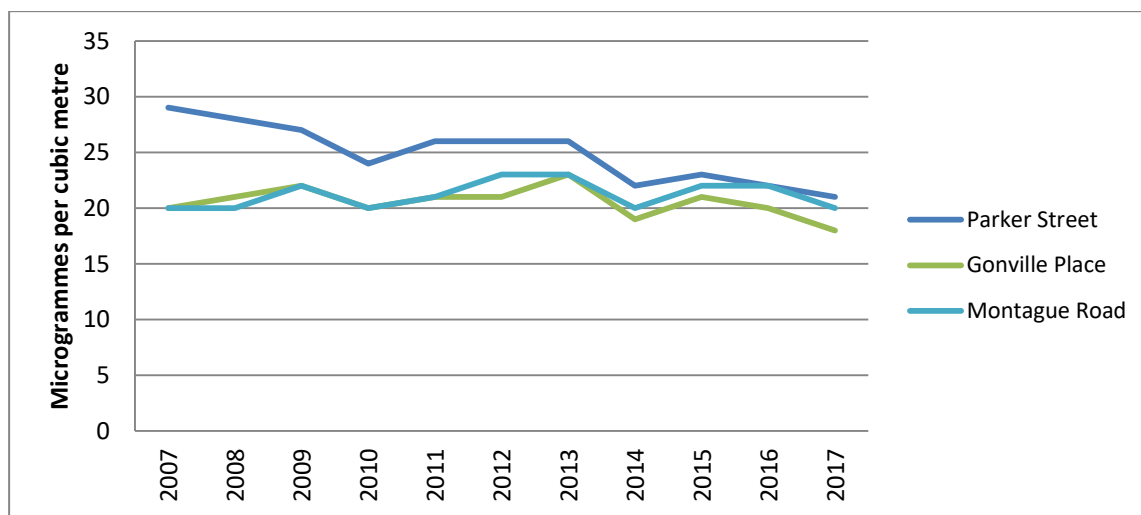


Figure 3.7 Trends in Annual Mean PM₁₀ Concentrations

There is a small increase in the number of 24-hour mean exceedences (greater than 50µgm³) 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.

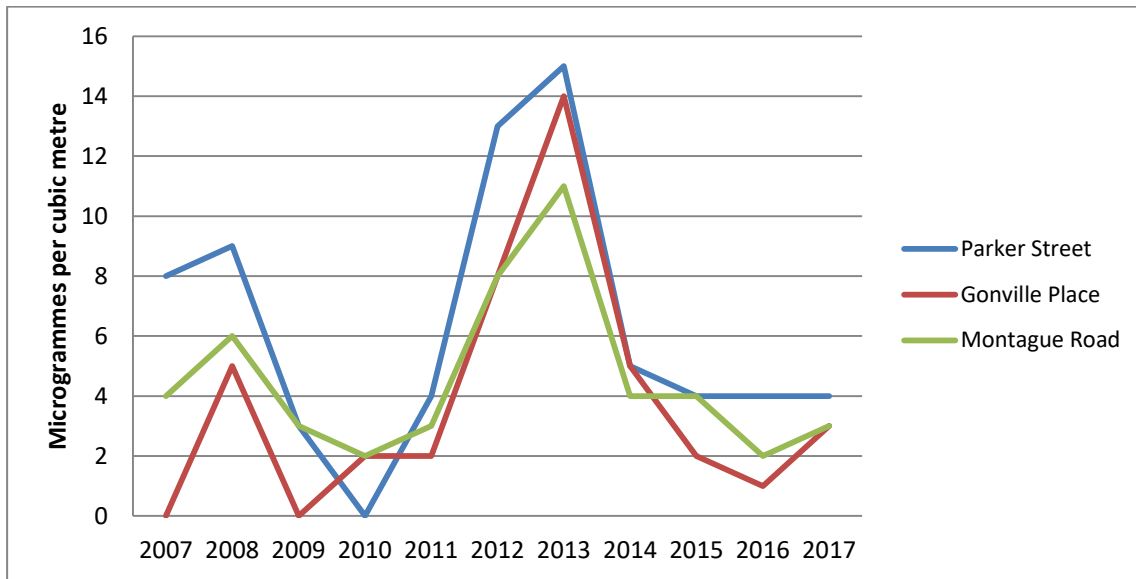


Figure 3.8: Number of 24-Hour mean PM_{10} results $>50 \mu g/m^3$

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 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 both sites. 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 PM_{10} results.

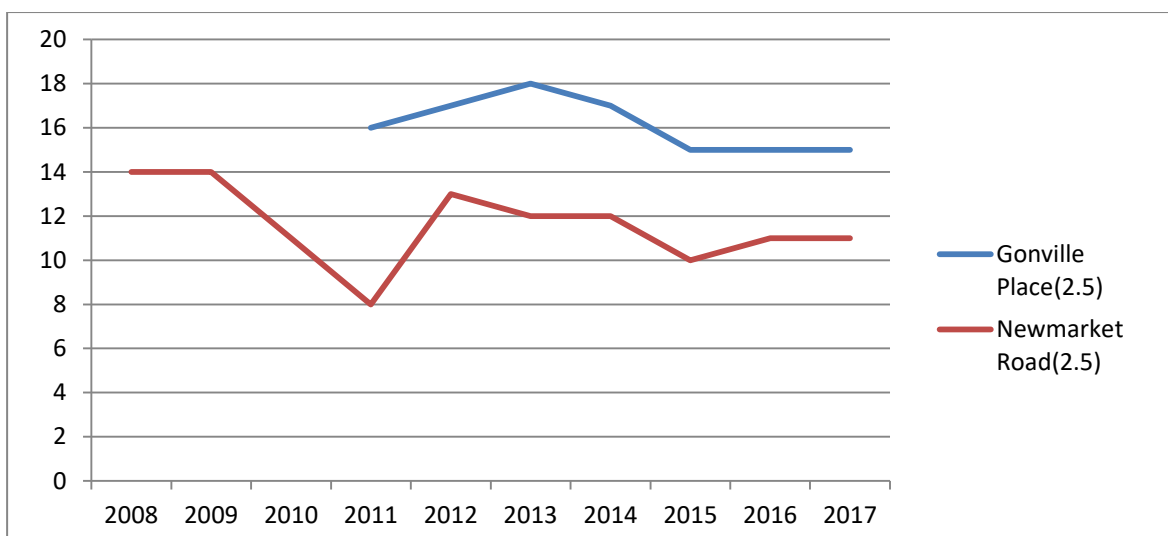


Figure 3.9: Trends in Annual Mean $PM_{2.5}$ Concentrations

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 2017 is $0.66\mu\text{g}/\text{m}^3$ and the annual maximum is $1.42\mu\text{g}/\text{m}^3$. The National Air Quality Objective of $5\mu\text{g}/\text{m}^3$ 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}	Y	Chemiluminescence, M200E 2 x BAM-1020	1.8	3.2	2.0
CM2	Montague Road	Roadside	546 057	259487	NO ₂ , PM ₁₀	Y	Chemiluminescence, M200E BAM-1020	1.4	3.9	2.0
CM3	Newmarket Road	Roadside	546 317	258 900	NO ₂ , PM _{2.5}	Y	Chemiluminescence, 42c SHARP-5030	0.5	3.3	2.0
CM4	Parker Street	Roadside	545 366	258 391	NO ₂ , PM ₁₀	Y	Chemiluminescence, M200E BAM-1020	0.5	3.3	2.5
CM5	Regent Street	Roadside	545 289	258 118	NO ₂	Y	Chemiluminescence ML2041	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	5.5
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	N	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	5	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
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 2017 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2013	2014	2015	2016	2017
DT1	Roadside	Diffusion Tube	92	92	38	39	35	38	34
DT2	Roadside	Diffusion Tube	100	100	28	32	31	27	23
DT3	Roadside	Diffusion Tube	100	100	29	30	28	27	21
DT4	Roadside	Diffusion Tube	92	92	38	39	38	37	33
DT5	Roadside	Diffusion Tube	100	100	32	36	33	34	29
DT6	Kerbside	Diffusion Tube	100	100	41	42	45	45	40
CM3	Roadside	Automatic	99.28	99.28	28	26	25	24	26
DT7	Roadside	Diffusion Tube	100	100	35	39	39	35	32
DT8	Roadside	Diffusion Tube	100	100	23	23	23	20	19
DT9	Roadside	Diffusion Tube	100	100	33	35	32	31	25
DT10	Kerbside	Diffusion Tube	100	100	22	21	21	22	21
DT11	Background	Diffusion Tube	100	100	12	13	12	13	10
DT12	Roadside	Diffusion Tube	92	92	28	29	28	29	28
DT13	Roadside	Diffusion Tube	83	83	29	30	28	26	24
DT14	Roadside	Diffusion Tube	92	92	27	28	27	25	24

DT15	Roadside	Diffusion Tube	75	75	34	37	35	36	31
CM5	Roadside	Automatic	97.33	97.33	38	39	34	32	29
DT16	Roadside	Diffusion Tube	83	83	32	33	34	30	29
DT17	Roadside	Diffusion Tube	75	75	27	25	26	24	22
DT18	Roadside	Diffusion Tube	100	100	39	43	39	36	34
DT19	Roadside	Diffusion Tube	92	92	27	23	27	23	21
CM2	Roadside	Automatic	95.1	95.1	29	24	23	27	24
DT20	Roadside	Diffusion Tube	100	100	32	35	32	31	26
DT21	Roadside	Diffusion Tube	100	100	33	33	30	28	25
DT22	Kerbside	Diffusion Tube	100	100	36	40	38	37	33
DT23	Roadside	Diffusion Tube	100	100	25	25	24	23	19
DT24	Kerbside	Diffusion Tube	92	92	30	32	35	29	29
DT25	Roadside	Diffusion Tube	100	100	21	20	22	22	19
DT26	Roadside	Diffusion Tube	100	100	25	24	23	22	19
DT27	Roadside	Diffusion Tube	100	100	27	27	25	24	19
DT28 – old	Roadside	Diffusion Tube	25	25	21	21	22	24	19
DT28 - New	Roadside	Diffusion Tube	50	50	N/A	N/A	N/A	N/A	39
DT29	Roadside	Diffusion Tube	100	100	23	23	23	22	21
DT30	Roadside	Diffusion	92	92	20	21	20	19	18

		Tube							
DT31	Roadside	Diffusion Tube	100	100	42	44	42	33	31
DT32	Roadside	Diffusion Tube	100	100	28	30	28	29	24
DT33	Roadside	Diffusion Tube	83	83	41	40	38	37	35
CM4	Roadside	Automatic	98.77	98.77	46	45	45	41	37
DT34	Roadside	Diffusion Tube	100	100	39	40	39	39	32
DT35	Roadside	Diffusion Tube	100	100	24	23	22	21	19
DT36	Urban Background	Diffusion Tube	92	92	18	19	20	20	17
DT37	Urban Background	Diffusion Tube	100	100	18	18	17	18	16
DT38	Roadside	Diffusion Tube	100	100	25	26	26	26	23
DT39	Kerbside	Diffusion Tube	92	92	34	33	34	32	28
DT40	Roadside	Diffusion Tube	92	92	40	40	42	39	33
DT41	Roadside	Diffusion Tube	58	58	36	38	34	36	28
DT42	Roadside	Diffusion Tube	100	100	26	26	26	27	24
DT43	Roadside	Diffusion Tube	83	83	38	34	34	36	32
DT44	Roadside	Diffusion Tube	92	92	29	30	30	31	23
DT45	Roadside	Diffusion Tube	83	83	43	42	40	37	33
DT46	Roadside	Diffusion Tube	92	92	25	25	23	25	23
CM1	Roadside	Automatic	98.77	98.77	35	37	35	36	31

DT47/48/49	Roadside	Diffusion Tube	100	100	35	37	36	35	31
DT50	Roadside	Diffusion Tube	83	83	33	32	32	32	23
DT51	Roadside	Diffusion Tube	100	100	26	26	27	27	24
DT52	Kerbside	Diffusion Tube	50	50	30	31	31	34	22
DT53	Kerbside	Diffusion Tube	92	92	32	34	31	34	30
DT54	Roadside	Diffusion Tube	100	100	25	28	23	23	21
DT55	Roadside	Diffusion Tube	83	83	24	27	26	25	25
DT56	Roadside	Diffusion Tube	100	100	28	30	27	27	23
DT57	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	25	33
DT58	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	36	32
DTS1	Roadside	Diffusion Tube	92	92	N/A	N/A	N/A	27	22
DTS2	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	36	32
DTS3	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	25	21
DTS4	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	22	18
DTS5	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	27	24
DTS6	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	27	22
DTS7	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	32	25

☒ 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 2017 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2013	2014	2015	2016	2017
CM1	Roadside	Automatic	98.77	98.77	0	0	2	0	0
CM2	Roadside	Automatic	95.10	95.10	0	0	0	0	0
CM3	Roadside	Automatic	99.28	99.28	0 (97)	0 (82)	0 (82)	0	0
CM4	Roadside	Automatic	98.77	98.77	0	0	0	0	0
CM5	Roadside	Automatic	97.33	97.33	0 (98)	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.

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2017 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2013	2014	2015	2016	2017
CM1	Roadside	97.55	97.55	23	19	21	20	18
CM2	Roadside	95.79	95.79	23	20	22	22	20
CM4	Roadside	98.72	98.72	26	22	23	22	21

☐ 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 2017 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾				
				2013	2014	2015	2016	2017
CM1	Roadside	97.55	97.55	14	5	2	1	3
CM2	Roadside	95.79	95.79	11	4	4	2	3
CM4	Roadside	98.72	98.72	15	5	4	4	4

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 2017 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2013	2014	2015	2016	2017
CM1	Roadside	96.83	96.83	18	17	15	15	15
CM3	Roadside	98.32	98.32	12	12	10	11	11

☐ 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 2017

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

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DT1	66.2	54.7	52.5	48.8	54.5	43.6	39.9	40.5	45.6	48.4		45.3	49.1	34.4	34.4
DT2	56.6	38.1	37	29.3	27.3	26.5	26.8	25	34.2	33	35.4	33.4	33.6	23.5	15.7
DT3	48.2	33.6	32.4	31.3	29.7	27.1	23.3	24.4	23.3	26.4	38.4	27.8	30.5	21.3	21.3
DT4	65	46.8	54.6	55.1	40.4	42.1	38.7		45.7	38.7	56.2	41.5	47.7	33.4	33.4
DT5	62.6	50.3	48.2	39.8	37.6	41.6	33.6	32.8	37.6	40.1	43.3	37.3	42.1	29.4	29.4
DT6	77.6	59.4	59.4	58.9	43.4	53	48.5	40.9	56.9	59.4	73.4	57.3	57.3	40.1	18.1
DT7	59	50.7	52.5	46.7	43.2	45.9	38.8	37.8	45.2	47.6	57.5	23.6	45.7	32.0	28.1
DT8	46.8	35.3	31.1	23.7	22.4	18.9	18.1	18	26.1	25.1	29.8	25.8	26.8	18.7	17.7
DT9	58.2	49.6	43.8	35.9	43.6	28.8	26.8	27.1	26.1	25.3	35.5	29.3	35.8	25.1	25.1
DT10	54.3	35.5	32.8	27.4	23.1	22.8	19.9	19.3	28.2	25.8	37.4	27.6	29.5	20.7	15.5
DT11	26.1	18.5	16.2	13.7	13	8.4	9.2	8.2	12.6	13.5	14.1	16.5	14.2	9.9	N/A
DT12	63.7	40.2	42.1	32.3	32.9	37	30.4		35.8	35.1	47.9	39	39.7	27.8	17.6
DT13		44.8	40.5		29.5	26.1	26.4	26.9	33.4	35.4	43.1	37.9	34.4	24.1	23.2
DT14	54.8	37.5	35.7	28.1	32.6		25.9	25.9	30.6	29.4	42.6	27.7	33.7	23.6	23.6
DT15	57.9	48.8	48	40.7	40				37.6	38.1	50.4	41.6	44.8	31.4	24.9

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DT16	58.9	44	43.2	44.6	38.5	34.7	35.3	35.5	36			39.8	41.1	28.7	28.7
DT17	58.2	34.8	32.8	34.7	27.3	20	21.7			26.2		30.9	31.8	22.3	18.8
DT18	61	50.2	52.4	47.4	46.6	46.2	46.5	39.8	49.9	44.9	49.4	46.4	48.4	33.9	33.9
DT19	52.1	34.1	32.9	26.6	23.5		16.9	18.4	26.7	27.4	41.1	30.4	30.0	21.0	14.7
DT20	60.1	47.6	37	32.7	33.8	29.2	28.3	27.7	36.1	30.7	41.6	39.5	37.0	25.9	N/A
DT21	58.6	44.1	36.5	35.6	31.6	25.9	27.5	27	36.4	32.7	45.9	34	36.3	25.4	25.4
DT22	69.1	53.2	48.1	46.2	49.7	47.5	39.3	36.5	46.3	43.6	47.1	35.3	46.8	32.8	18.6
DT23	47.6	26	29.7	24.8	27.1	15.9	22.1	21.8	28	27	38.5	21.2	27.5	19.2	14.2
DT24	58	42.5	49.2	35.1	31.8	32.1	31.3		41.3	40.6	48.4	41.5	41.1	28.8	24.2
DT25	47.2	31	29.6	25.9	24.9	18.1	22.8	18.6	22.8	20.5	32.7	28.4	26.9	18.8	14.1
DT26	46.7	31.6	32.1	30.2	27.8	19	21.2	19.1	23.6	20	32.7	24.1	27.3	19.1	12.3
DT27	55.4	38.5	31.2	21.4	25.7	19.5	19	19.7	22.3	27.9	28.1	17.1	27.2	19.0	17.6
DT28	46.3		33.1	26.9									35.4	19.0	13.7
DT28						45.4	47.2		53	49.8	60.2	37.8	48.9	39.0	18
DT29	48.5	34.2	33.4	27.6	25.8	21.6	20.1	21.5	30.7	28.6	38.5	26.3	29.7	20.8	15.5
DT30	48.4	30.7	29.8	26.4		15.8	16.6	18.1	23	19.7	34.6	25.4	26.2	18.4	15.4
DT31	65.2	48.1	46.6	40.3	44.2	34.5	45.7	37.5	43	43.1	48.2	38.7	44.6	31.2	31.2
DT32	56.3	38.7	38.1	35.1	31.5	26.8	25.7	25.4	33.8	33.1	44.1	27.7	34.7	24.3	22.6
DT33	73.9	53	53.3	46.2	57.1			42.7	49.8	40.3	46.1	31	49.3	34.5	34.5
DT34	39.8	53.9	55.9	47.4	53	38.2	39	42.8	45.5	44.9	55.9	40	46.4	32.5	32.5
DT35	50	33.9	27.7	23.2	20.1	19.3	19	18.2	25.9	25.9	39.4	29.4	27.7	19.4	18.4
DT36	43.1		25.5	24.3	17.2	16	14.6	17.2	23.1	23.1	33.7	25.9	24.0	16.8	16.8
DT37	34.9	28.5	25.5	23.1	16.2	15.8	15.3	18.3	20	20.1	35.7	20.8	22.9	16.0	13.1
DT38	54.2	35.1	42.3	32.6	28	17.7	23.3	20.6	29.8	32.4	45.2	37.7	33.2	23.3	21.4
DT39		41.1	46.5	45.4	36.2	20.2	33	36.5	38.5	41.9	58.3	41.5	39.9	27.9	21.1
DT40	64.5	53.1	54.7		44	43.3	41.3	43.6	43.5	35.8	52.7	44.9	47.4	33.2	33.2
DT41	57.9	50.1	45.5					31.5		41.6	51.5	44.6	46.1	28.0	28

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DT42	55.3	38.8	38.3	32.9	26.3	27.7	24.1	24.8	33.4	31	41.2	36.1	34.2	23.9	23.9
DT43	65.1	51.4	51.7		41.9	45	38.2	36.4		39.8	51.6	37.3	45.8	32.1	25.4
DT44	47.7	46.8	41.3	40.6	30.3	28.3	29.9	19	23	21.7	26.7		32.3	22.6	19.8
DT45	65.8	54.4	43.3	48.8	43.7	41.1		36.3	46.6		50.7	47.8	47.9	33.5	29.8
DT46	60	35.2	32.9	26.7	16.3	20.8		27.4	30.5	29.4	42.5	39	32.8	23.0	17.7
DT47	65.6	51.7	52.2	37.8	47.2	44.3	19.6	38.9	46.6	36.3	50.1	42.8	44.4	31.1	31.1
DT48	56.4	48.9	48.9	44.3	48.3	43.1	18.9	35.7	44.8	39.6	47.4	37.5	42.8	30.0	30
DT49	60.6	48	48	40.8	46.9	43	36.8	35.7	46.5	36.9	47.2	40.1	44.2	30.9	30.9
DT50			43.7	34.8	35	28.3	16.2	26.9	34.9	32.6	42.2	32.2	32.7	22.9	20.6
DT51	51.6	38.4	37	34.4	26.7	32.3	16.4	24.5	33.2	32.4	42.1	36	33.8	23.6	20.7
DT52	55.3	43.3	39.1	31					32	25.6			37.7	22.0	15.4
DT53	62.1	45.8	44.3	45.1	40	35.1		34.9	44.9	37.7	43.4	31.7	42.3	29.6	18.9
DT54	51.5	36.4	34.8	31.6	23.8	19.2	11.3	22.2	31.6	27.9	38.8	30.4	30.0	21.0	15.9
DT55	51	47.5	36	35.8	33.6	26.4	27.1		28.2	27.8	40.5		35.4	24.8	18.4
DT56	54.8	41.5	39.5	37.2	30.6	26.1	24.1	15.1	30.4	27.2	42.3	30.9	33.3	23.3	18.7
DT57	69.6	50.3	48.3	47.5	47.1	49.4	40.9	38.8	47.6	43.3	50.3	35.8	47.4	33.2	23.5
DT58	60	56.4	51.2	43.1	39.5	42.2	40.6	39.4	42.4	36	49.2	45.2	45.4	31.8	22.9
DTS1	51.6	48.8	38.7	27.5	34.2	24.5	23.6	21.8	25.9	23.5		25.8	31.4	22.0	14.8
DTS2	51.5	53.8	49.9	48.5	41.3	41.7	35.2	42.5	37.1	45.8	53.8	44.9	45.5	31.9	19.9
DTS3	47.4	38.3	36.1	30.2	23.7	22.1	20	24.7	28.8	29.3	35.7	30.2	30.5	21.4	14.5
DTS4	46.5	34.5	29.3	22.6	22	15.8	14.8		21	22	33.4	22.5	25.9	18.1	15.6
DTS5	52.6	43.5	40.3	30.6	30.6	26.5	23.6	28.6	28.1	31	32.7	36.1	33.7	23.6	14.7
DTS6	52.3	34.1	40.8	36.2	31.1	20.6	21.3	22.9	22.9	29.4	41	29.8	31.9	22.3	15
DTS7	53.3	41.1	42	32	35	33.1	29.2	26.1	32.8	33.7	41.2	33	36.0	25.2	15.3

☒ 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

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), serviced every 6 months by Enviro Technology Services plc (ET) and audited by AEA NETCEN either as part of the AURN or through the 'Calibration Club'. All data is collated and ratified externally by AEA Technology. 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. Harwell Scientifics 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 Netcen, 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 Netcen 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 2017 this is 0.70 compared with a nationally derived factor of 0.77 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. The local bias adjustment figure is lower in 2017 than usual which may be a factor in the results this year appearing to be favourable. However for consistency we have opted to use the local bias adjustment figure.

Annualisation

The annualisation calculations for sites with low data capture during 2017 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 Latham Road (DT11) background tube

Downing Street (DT41)

Data Capture – 7 Months (58%)

	Latham Road	Downing Street	Latham Road
January	26.1	57.9	26.1
February	18.5	50.1	18.5
March	16.2	45.5	16.2
April	13.7		
May	13		
June	8.4		
July	9.2		
August	8.2	31.5	8.2
September	12.6		
October	13.5	41.6	13.5
November	14.1	51.5	14.1
December	16.5	44.6	16.5

Average	14.17	46.10	16.16
Am/Pm	0.88		
Estimated Annual Mean	40.42		
Bias adjusted	28.29		

The low data capture is due to both missing tubes and the rejection of low readings.

Station Road (DT52)

Data Capture - 6 Months (50%)

	Latham Road	Station Road	Latham Road
January	26.1	55.3	26.1
February	18.5	43.3	18.5
March	16.2	39.1	16.2
April	13.7	31	13.7
May	13		
June	8.4		
July	9.2		
August	8.2		
September	12.6	32	12.6
October	13.5	25.6	13.5
November	14.1		
December	16.5		
	14.17	37.72	16.77
Am/Pm	0.84		
Estimated Annual Mean	31.87		
Bias Adjusted	22.31		

The low data capture was due to missing tubes and rejection of low readings.

Babraham Road (DT28)

This tube was relocated due to the construction of a new cycle way alongside Babraham Road. The tube which was adjacent to the receptor has now been put at roadside which accounts for the higher levels recorded at the new site

Data Capture (old) – 3 months (25%)

Data Capture (new) - 6 months (50%)

	Latham Road	Babraham Road - old	Latham Road
January	26.1	46.3	26.1
February	18.5		
March	16.2	33.1	16.2
April	13.7	26.9	13.7
May	13		

	Latham Road	Babraham Road - New	Latham Road
January	26.1		
February	18.5		
March	16.2		
April	13.7		
May	13		

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June	8.4		
July	9.2		
August	8.2		
September	12.6		
October	13.5		
November	14.1		
December	16.5		
	14.17	35	18.67
Am/Pm	0.758928571		
Estimated Annual Mean	26.89		
Bias Adjusted	18.82		

June	8.4	45.4	8.4
July	9.2	47.2	9.2
August	8.2		
September	12.6	53	12.6
October	13.5	49.8	13.5
November	14.1	60.2	14.1
December	16.5	37.8	16.5
	14.17	48.9	12.38
Am/Pm	1.144010767		
Estimated Annual Mean	55.94		
Bias Adjusted	39.16		

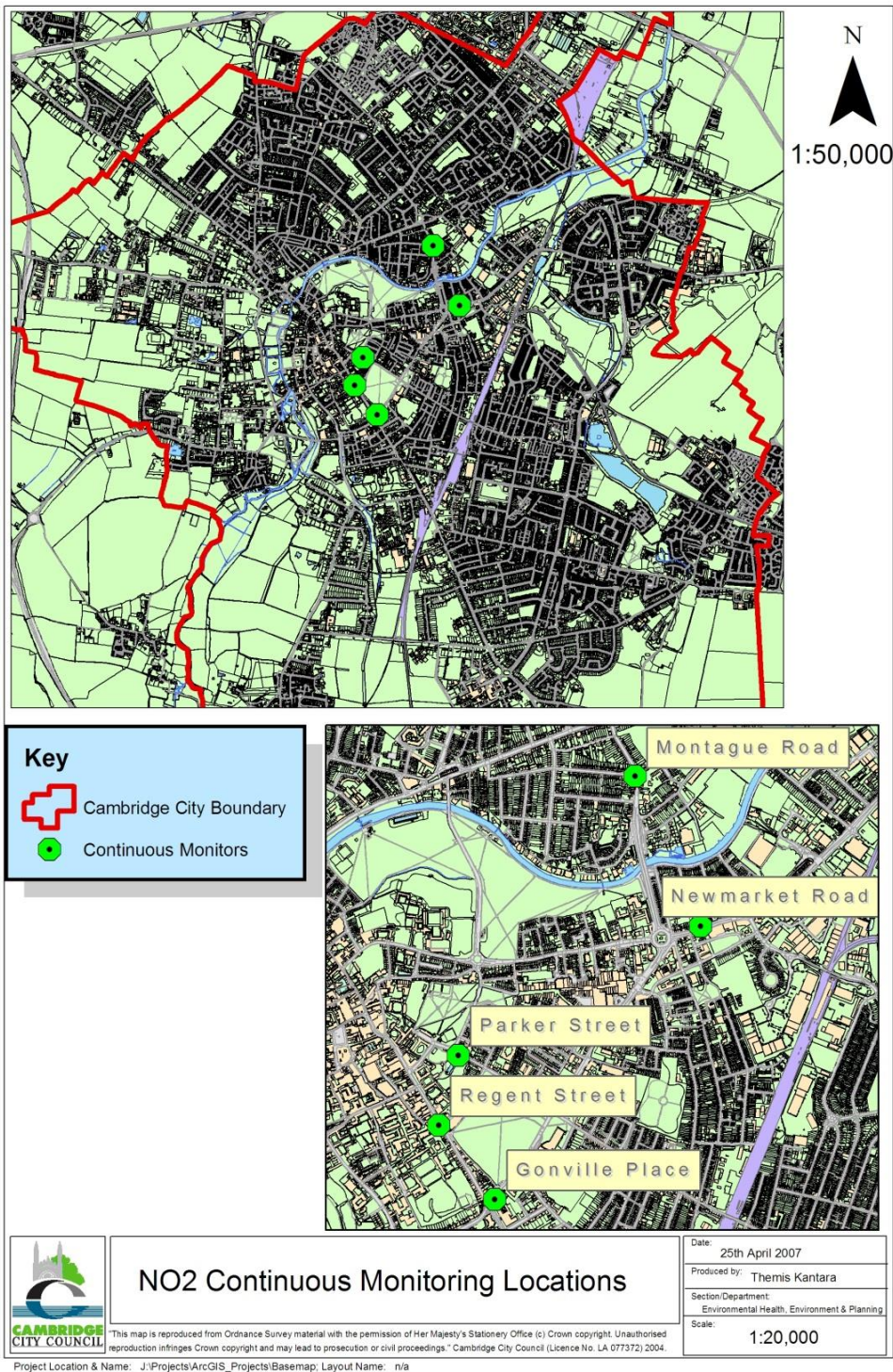
Benzene

QA/QC

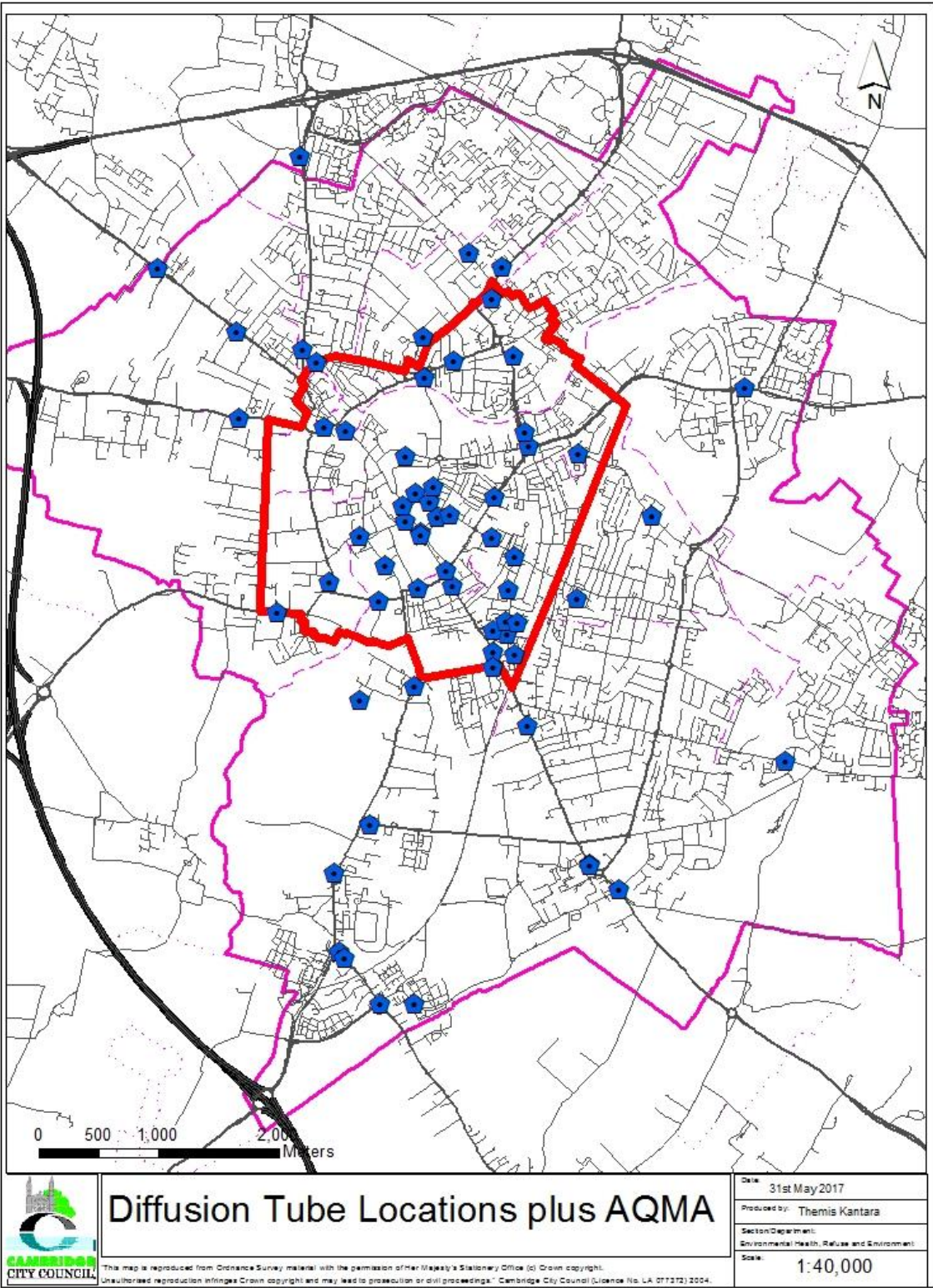
Cambridge City Council has measured benzene at Cambridge Roadside on behalf of the national monitoring network since February 2008. Tubes are changed fortnightly by the LSO. Data is collected by Ricardo AEA.

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 ¹²	
	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

¹² The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: Defra appraisal comments on the draft Air Quality Action Plan 2018 – 2023

This Appraisal Report covers the Draft Air Quality Action Plan submitted by Cambridge City Council. The Action Plan sets out information on air quality obtained by the Council as part of the Local Air Quality Management process required under the Environment Act 1995 and subsequent Regulations. It is a draft Action Plan that is subject to public consultation and is expected to be revised and adopted by the Council following the consultation process.

The first Cambridge Action Plan was integrated into the Cambridgeshire County Council's LTP2 (2006-2011). It included action plan indicators and targets and involved:

- Expansion of the Core Area traffic road closure programme to further limit access to the city centre
- Development of a low emission zone in the historic city centre by setting minimum emission standards for buses and taxis.
- A 20 mph speed limit in parts of the city centre
- Regulation of goods vehicles
- A pro-active stance on land-use planning in relation to air quality and a requirement for Air Quality Assessment for new developments
- Continued limitation of parking in the Core Area by our adopted car parking standards
- Full implementation of our Cycling and Walking Strategy

Reductions in pollution concentration levels of up to 33% were required in central Cambridge to achieve the air quality objectives.

The AQAP was updated in 2009 and integrated with Action Plans from Huntingdonshire DC and South Cambridgeshire County Council, as an AQAP for Cambridgeshire Growth Areas. A key objective was to lower emissions from buses and taxis by requiring newer vehicles with higher Euro emission standards. This was accompanied by a range of supporting measures including planning policies, infrastructure changes, reductions in building emissions as well as increasing cycling and walking facilities.

A new framework Air Quality Action Plan, 2015–25, was proposed to the Environment and Scrutiny Committee in March 2015 and unanimously agreed. The Plan set out the revised approach to improving air quality in Cambridge. The main actions brought forward from the revised Air Quality Action Plan 2015–25 to continue to focus on continuously improving emissions from the vehicles being driven around Cambridge as well as infrastructure changes, public transport improvements, demand management,

lowering emissions from buildings, promoting smarter travel choices, strategic planning and development control.

The latest monitoring data highlights there is now only a single marginal exceedance ($41\mu\text{g}/\text{m}^3$) of the annual mean objective at a position of relevant exposure recorded in the City of Cambridge AQMA. Consequently, emission levels need to be reduced and maintained at a marginally lower level in order to achieve the annual mean air quality objective for nitrogen dioxide. The monitoring data highlights that pollution levels have generally continued to fall at a slow but steady rate over recent years.

The plan highlights that a 5.2% reduction in nitrogen oxide emissions is required to meet the air quality objectives at current traffic levels. However, the report also identifies the challenge of future planned growth in the Cambridge area leading to a 30-40% increase in peak hour traffic, which could lead to increased emissions and challenge future air quality.

The latest draft Action Plan recognises the current position and has considered a wide range of potential measures in a prioritised approach as follows:

- Priority1: Reducing local traffic emissions as quickly as possible to meet national objectives;
- Priority2: Maintaining pollutant levels below national objectives;
- Priority3: Improving public health by reducing population exposure to air pollutants

In the short term Priority 1 measures will have most influence to address emissions reductions in the central Cambridge AQMA. The full range of AQMA measures presented in the AQAP have been developed within 7 Themes for action, within Priorities 1-3, as follows:

Theme1. Reduce emissions from Taxis by requiring low emission taxis

Theme2. Reduce emissions from Buses and Coaches

Theme3. Reduce emissions from HGVs

Theme4. Reduce emissions from all traffic/other traffic by providing better public transport

Theme5. Maintaining Low Emissions through the planning process and long-term planning

Theme6. Improving Public Health

Theme7. Leading By Example

Key priorities and measures for delivering them are provided and include:

- provision of electric vehicle charge points (slow, fast and rapid) to enable the transition to low emission taxis and other vehicles,
- licensing policies,
- parking policies,
- development control policies to require provision of EV charge points and low emission boilers,
- improving provision of lower emission travel alternatives, such as low emission buses
- a Clean Air Zone

AQAP is built around the three main Priorities, reducing emissions, followed by ensuring that emissions remain at levels below the National Air Quality Objectives, and finally to improve public health by reducing air pollution levels and keeping them as low as possible.

The aims of the draft AQAP are to deliver these objectives by effective planning controls and ensuring that policies are in place to keep emissions low.

Cambridge City Council are working with the Greater Cambridge partnership to produce a detailed feasibility study for implementing a Clean Air Zone for Cambridge.

The outline of this Air Quality Action Plan has been approved by Cambridge City Council Environment Scrutiny Committee (March 2015), and the final Air Quality Action Plan will be discussed at Cambridge City Council Environment Scrutiny Committee in March 2018.

The Air Quality Action Plan will be subject to an annual review, appraisal of progress and reporting to the Environment Scrutiny Committee (Cambridge City Council). The Plan will also be reported to the Health Committee for information (Cambridgeshire County Council) and the Cambridge Area Joint Committee for discussion (Cambridge City Council and Cambridgeshire County Council). Progress each year will be reported in the Annual Status Reports (ASRs) produced by Cambridge City Council, as part of the statutory Local Air Quality Management duties.

The Council is advised to take consideration of the further commentary in the finalisation of its action plan.

Commentary

Summary: The Plan is well presented and proportionate to the air quality problems identified. It is clear that the Council have made significant progress in developing and reviewing measures in previous Action Plans integrated with Planning and Transport Policies at both the local and regional levels. The latest monitoring highlights only one single monitoring site with a marginal exceedance, suggesting that some measures to control and limit emissions in central Cambridge remain the focus of measures in the new Action Plan. The latest LTP includes area strategies to manage congestion and CO₂ emissions, including the uptake of low emission fuels and sustainable transport policies and strategies. Delivery Plans are proposed to set out how plans will be achieved.

Background information:

The Action Plan includes a framework for local plan policies highlighting plans and policies that can impact on air quality. The Greater Cambridgeshire Partnership as the delivery body for the City Deal provides a mechanism for many of the key measures within the AQAP by funding local green transport projects in partnership with the City Council, County Council, University and Greater Cambridge and Greater Peterborough Local Enterprise Partnership. Further traffic demand measures are being progressed through the City Access Team. From November 2016 a Combined Authority of 8 local authorities across Cambridge and Peterborough was launched, with responsibility for major transport and housing projects.

Supporting data:

The latest source apportionment highlights the contrast in dominant emission sources, with buses and HGV dominant in the city centre, whilst the ring road is dominated by cars, light vans, buses and HGV's. The plan highlights that a 5.2% reduction in nitrogen oxide emissions is required to meet the air quality objectives.

Level of ambition:

The report makes clear that a 5.2% NOx emissions reduction will only achieve the objectives at current traffic levels, reflecting Priority 1 measures to reduce emissions in central Cambridge.

Key measures under Priority 1 focus on buses, coaches and HGV's, as the key priority for improving air quality in Cambridge, where a Cambridge Bus Emissions Reduction commitment has been developed, to inform work through a proposed Quality Bus Partnership.

The key measures proposed within the plan are not likely to be active before year4 (2021) of the action plan, where they are proposed to deliver 75% reduction in NOx emissions from buses and coaches, resulting in a 33% reduction of total emissions in central Cambridge. Buses contribute 45% of the NOx emissions in the city centre, so a reduction of 33% of total emissions could be achieved in the city centre and 15% reduction in NOx emissions on the ring road.

Emission reduction options are considered for bus retrofitting and electric bus fleet options, however it is recognised that the impact of HGV's has been under-estimated.

Impacts of potential Euro VI emission standard Clean Air Zones have been considered on HGV emissions. It has been estimated that total NOx emissions reductions of up to 54% may be achievable in central Cambridge. Further calculations of CAZ impacts are proposed following the results on an ANPR study. Additional

freight interventions are also being considered, including freight and delivery management.

A CAZ is anticipated for introduction from 2020 in year 3 of the AQAP, subject to a feasibility study via the Greater Cambridge Partnership.

There are significant future housing and transport growth planned for the area, highlighting further initiatives are required to ensure emission levels are controlled further. Priority 2 initiatives for medium and long term strategies, are designed to reduce emissions across Cambridge, and are focussed on installation of EV charge points. The potential impact on emissions reductions and air quality has not been quantified for Priority 2 and Priority 3 measures.

Finally Priority 3 emissions have been outlined to keep emission low in the future, based upon development and delivery of relevant transport and planning policies, strategies and plans.

Selection of measures: The list of transport measures considered in Table 4.1 is extensive, being a mix of measures across all Priority groups, with Priority 1 measures linked to Themes 1-7 subject to outline assessment, and remaining measures where no further assessment or prioritisation have been considered.

It would assist readers of the plan, e.g. during the public consultation process, to provide details by which Priority 1 measures have been prioritised, and what further assessment and prioritisation will be used for the selection of measures in the development of the final stage of the action plan.

Analysis: The potential impact of the Priority 1 measures have been subject to outline assessment within the draft action plan. The level of emissions reductions associated with these measures suggests there is significant potential within the Priority1 measures to reduce pollution levels below objective levels. However there is some potential time delay before the key priority measures are expected to be implemented. At this point it is not clear which measures are likely to be funded, or delivered within a final action plan. Measures to reduce emissions from buses and coaches by a complete fleet upgrade to Euro VI vehicles, suggest a potential to reduce total emissions in the city centre by as much as 33%.

The draft action plan suggests that the continuing improvement of the bus fleet remains the most effective way of reducing emissions and improving air quality in Cambridge, but the impact of HGV emissions in the core area appears to have been underestimated. Hence it appears that further work is required to consider the effectiveness of measures to reduce HGV emissions.

A Quality Bus Partnership is proposed to provide a mechanism to establish an agreement with bus operators for adopting emissions reductions measures. However there is no indication that a Partnership has been established between the bus operators and the local transport authority, which would be a pre-requisite for negotiating the arrangements for delivering bus emissions reductions.

Adoption of Euro VI emission standards for all HGV's through implementation of a Clean Air Zone is suggested to have the potential to reduce total emissions within central Cambridge by up to 54%. These outline assessments are expected to be reviewed as part of the feasibility study for the Clean Air Zone.

Further measures are proposed that are expected to reduce traffic, and traffic emissions, including traffic management measures to manage access to the city centre, including an extension to the central core area, and parking restrictions. A range of additional measures to reduce traffic emissions are under consideration, including freight and delivery management, car-clubs, travel alternatives, and promoting low emission transport. The potential impact of these further measures remains to be assessed.

Monitoring progress:

There is no clear indication within the draft Action Plan as to the basis for the outline assessments.

Reductions in Bus, Coach and HGV emissions, alongside access restrictions are considered to have the greatest potential to deliver the required level of reductions in central Cambridge. It appears that these measures are not yet established as fully committed or funded measures.

KPI's and target pollution reductions in the Draft AQAPs are only listed for core measures and based on outline estimates. There are no KPI's or pollution reduction targets established for the majority of measures within the draft plan.

Impact assessment information:

The core measures have not been developed to the stage where it is possible to enable a comprehensive assessment of emissions reductions to be assessed. It is clear that there remains some significant uncertainty over the feasibility of delivering many of the key measures outlined in the plan. The nature of many of the Bus Quality Partnership measures require further development between the Transport Authority and the Bus Operators and access to significant funding for retrofitting or adoption of low emission alternatives.

It is clear that the major project work packages, including City Access Study, Retrofitting, Clean Air Zone, all require cost benefit assessments as part of the prioritisation and selection of final measures. The draft plan states that emissions reductions will be costed and assessed as project clarity is developed.

This is the greatest weakness in the plan. While a commitment to providing a detailed Delivery Plan is given, information on costs, funding and timescales would have been useful in both prioritising the measures and allowing consultees to make a balanced judgement on their efficacy.

The draft plan demonstrates that there are priority measures that can be implemented that have the potential to deliver significant emissions reductions in the AQMA, however there remains uncertainty in relation to what extent these measures can be delivered within specific timescales. Ideally an assessment should be carried out that considers the combined impact of future emission reduction scenarios, alongside potential future traffic growth as a basis for prioritisation of measures within the final action plan. This may not be practicable, however the commitment to assess the impact of proposed measures in more detail in central Cambridge, remains a priority to aid future decision making.

The mechanisms for prioritisation and selection of final action plan measures need to be made clear, including details of how the delivery of measures will be captured via KPI's in future reports.

This information will be required to make the final plan complete under the terms of Defra guidance. The latest Defra Technical Guidance on Action Plans in Chapter 2 of LAQM TG(16) should be consulted in full, in preparation of the final action plan.

Additional impacts:

No significant information is provided on the co-impacts of the core measures, i.e. their impact on other environmental, social or economic issues other than air quality.

There is no clear assessment of the current extent of the population exposure within the central AQMA, which currently only shows a marginal exceedance.

There is no general consideration for the impact of the draft plan measures or when the measures in the plan may expect to deliver the air quality objectives. The current AQAP is not integrated with the Local Transport Plan, and it is clear that future planned developments have the potential to give rise to traffic growth and increases in emissions. Ideally commitments for limits to carbon and air pollution emissions from motor vehicles, should be linked to future transport plans.

Appendix G: Defra appraisal comments ASR 2017

Defra's appraisal of last year's ASR concluded:

"The report is well structured and provides the information specified in the Guidance, using the latest report template. It is considered to be an example of good practice. The Council have completed a series of innovative developments, including the Guided Busway, and further initiatives to promote alternative transport corridors into the city. However the report highlights that further transport management interventions are required to meet the air quality objectives.

The following comments are made on the report:

1. The latest monitoring results highlight there are persistent pollution hotspots particularly in the central area, with areas being impacted by the effects of increased traffic and congestion. There is evidence of increasing pollution levels in some areas, and overall the concentrations are not decreasing at a rate that is consistent with meeting the air quality objectives in the near future.
2. We note the Council have modified the next air quality action plan to provide a greater focus on introducing measures to introduce low emission passenger transport in the city, and consider a range of measures to restrict vehicle traffic, including options such as a Clean Air Zone, Category A, requiring all buses and coaches to be Euro6 or better.
3. The Council may wish to contact Defra in relation to considerations that may include the development of a Clean Air Zone.
4. 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.
5. Chapter 2 of the latest Technical Guidance from DEFRA in LAQM TG(16), provides detailed advice for what makes an effective action plan, describing the steps that should be considered in relation to developing an action plan.

6. It will be important to ensure that this level of assessment is carried out at an early stage in the process, so that the necessary linkages between transport and environment policy can be established from the outset.
7. The local authority should ensure that their new action plan identifies the key sources of emissions within the AQMA and the level of reduction in NO_x emissions required to achieve the NO₂ objective. Key performance indicators should be developed to allow the impact on each measure in the plan to be monitored either qualitatively or quantitatively.
8. It would be informative if future reports included a detailed map showing the location of the monitoring sites in relation to the AQMA boundary, with points identifiable as labelled in results tables.
9. We note the draft action plan will be developed over the coming year. Statutory consultation will be required for the draft Action Plan, requiring submission to Defra, before the plan is adopted by the Council.

With reference to the specific comments:

3. The Greater Cambridge Partnership is taking the lead on development of options for a Clean Air Zone; the team is aware of the Defra proposals for the mandated local authorities and will consult with Defra in due course.
4. Transport management proposals will be undertaken by the Greater Cambridge Partnership and air quality impacts will be considered at the outset as part of the options appraisal prior to public consultation.
5. Noted.
6. Noted.
7. Noted.
8. It would be informative if future reports included a detailed map showing the location of the monitoring sites in relation to the AQMA boundary, with points identifiable as labelled in results tables. I think we are unable to do this at this time with no GIS expertise in the team.
9. Statutory consultation was carried out in early 2018 draft Action Plan; the plan was adopted by the Council in March 2018. Defra's appraisal of the Air Quality Action Plan is in Appendix F.

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

