





Cheltenham Borough Council
Air Quality Action Plan
January 2024

Shaping a World of Trust

Document Control Sheet

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Cheltenham Borough Council

Air Quality Action Plan

In fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

January 2024

Cheltenham Borough Council

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Date	January 2024

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in Cheltenham Borough Council (CBC) between 2023-2028. The AQAP sets out how the local authority will exercise its functions in order to secure the achievement of the air quality objectives.

This action plan is the final version and will be adopted upon acceptance by Defra. Implementation of the outlined measures will result in the relevant objective being attained by 2026.

The relevant Air Quality Management Areas (AQMAs) addressed by this action plan is the Cheltenham AQMA, an area including properties with a façade fronting onto: High Street from junction of Gloucester Road and Tewkesbury Road to junction of Burton Street; Poole Way; and Swindon Road from junction of Poole Way to St Georges Street.

This action plan replaces the previous action plan which was put in place in 2014.

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³. Cheltenham Borough Council is committed to reducing the exposure of people in Cheltenham to poor air quality in order to improve health.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

The top priority of Cheltenham Borough Council is to bring about and maintain compliance with the AQS objective. To achieve this, we have developed actions that can be considered under four broad topics area and priorities accordingly:

- Priority 1: Transport
- Priority 2: Planning and Infrastructure
- Priority 3: Policy Guidance
- Priority 4: Public Health and Wellbeing Behavioural Change
- Priority 5: Air Quality Monitoring

The priorities within this action plan intend to target transport emissions within the AQMA through working with local businesses aid a behavioural shift within the population to promote more sustainable and less polluting methods of transport. This should help to reduce dangerous pollutant concentrations and reduce the risk of detrimental impact on health and wellbeing within the borough. In addition, where transport remains a major source of air pollution, traffic measures will be implemented to reduce congestion, aiming to reduce source emissions in areas of relevant exposure. The AQAP also seeks to align with the county wide Air Quality and Health Strategy and Plan.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond Cheltenham Borough Council's direct influence.

Responsibilities and Commitment

This AQAP was prepared by Bureau Veritas and the Environmental Health Department of Cheltenham Borough Council with the support and agreement of the following officers and departments:

- Cabinet Member Councillor Max Wilkinson
- Clean Air Cheltenham Local Action Group
- Licensing

- Parking
- Strategic Transport
- Economic Development
- Fleet Management
- Climate Change
- Gloucestershire County Council's Transport and Highways

This AQAP has been approved by:

- Head of Public Health at Gloucester County Council
- Environmental Health at Cheltenham Borough Council

This AQAP will be subject to an annual review and appraisal of progress. Progress each year will be reported in the Annual Status Reports (ASRs) produced by Cheltenham Borough Council as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to the environmental health team at envhealth@cheltenham.gov.uk.

This AQAP will be subject to an annual review and appraisal of progress. Progress each year will be reported in the Annual Status Reports (ASRs) produced by Cheltenham Borough Council as part of our statutory Local Air Quality Management duties.

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1 Introduction

This report outlines the actions that Cheltenham Borough Council will deliver between 2024-2028 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to Cheltenham.

The purpose of the report is to set out how the local authority will exercise its functions in order to achieve the relevant air quality objectives. This action plan is a final version and will be adopted from 01/01/2024.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995, as amended by the Environment Act (2021), and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

Development of the AQAP has taken place through discussions within a Cheltenham Borough Council Steering Group led by Bureau Veritas.

The document has been subjected to both internal and external consultation as an initial draft to the following parties, in line with PG(22) guidance⁴:

- Department of Environment, Farming and Rural Affairs (Defra);
- Cheltenham Borough Council;
- Gloucestershire County Council (GCC);
- Resident action group 'Clean Air Cheltenham'; and
- Bodies representing local business interests and other organisations as appropriate, in particular the Cheltenham and Tewksbury Cycling Group who provided extensive comments.

⁴ Local Air Quality Management Policy Guidance LAQM.PG(22). August 2022. Published by Defra

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This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Cheltenham's air quality ASR.

2 Summary of Current Air Quality in Cheltenham Borough Council

2.1 Air Quality Management Areas

The Cheltenham Borough Council AQMA was declared in 2020, covering an area extending from the junction of Gloucester Road, Tewkesbury Road and High Street, through Poole Way and along Swindon Road to the junction of St George's Street.

The relevant Air Quality Management Areas (AQMAs) addressed by this AQAP are outlined below and the spatial extent shown in Figure 2.1.

Figure 2.1 – Cheltenham AQMA Boundary

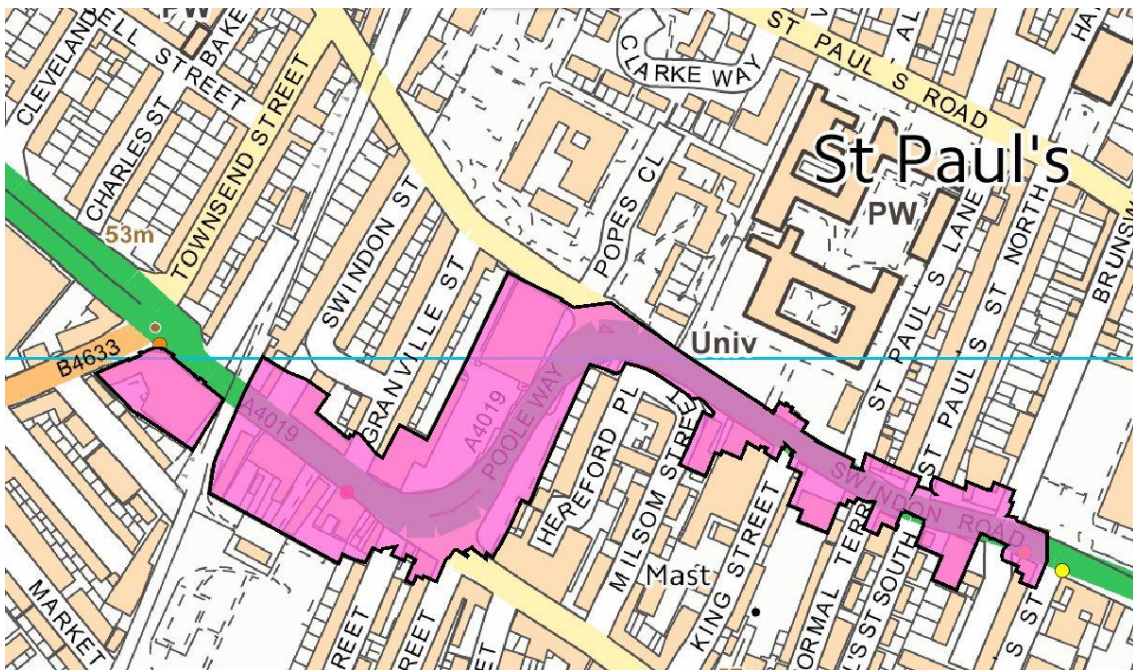


Table 2.1 – Relevant Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective
Cheltenham Borough Council AQMA 2020	15/09/2020	NO ₂ Annual Mean	Includes properties with a façade fronting onto: High Street from junction of Gloucester Road and Tewkesbury Road to junction of Burton Street; Poole Way; and Swindon Road from junction of Poole Way to St Georges Street	No	46.5µg/m ³	36.0µg/m ³	2 years

2.2 Public Exposure

In accordance with PG(22), the approximate population of the AQMA is 76 people, based on the total area of the AQMA being $\sim 0.03\text{km}^2$ and the population and the population density of Cheltenham being 2,550 per km^2 ⁵.

The Indices of Multiple Deprivation show the relative deprivation of neighbourhoods for areas across the UK. Following a review, the AQMA is shown to span three separate 'Lower Super output areas' ranging from IMD deciles of 1 to 6 with 1 being representative of the most deprived area and 10 being least deprived. This suggests that the AQMA is populated by more deprived members of the population.

2.3 Monitoring of NO₂ Concentrations within AQMA

NO₂ is the principal pollutant of concern for Cheltenham Borough Council due to the known health effects of exposure to high concentrations. NO₂ has been monitored since 1996. NO₂ is emitted as a result of combustion processes. Within town and city centres, the primary source tends to be from road traffic, which combust fuel to produce gases.

Cheltenham Borough Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 45 sites in 2022, including one triplicate diffusion tube site and one automatic monitoring site. The monitoring network serves as an ongoing indicator for changing NO₂ trends within the borough and will be essential for the assessment of implementation for the measures detailed within this AQAP. The monitoring network also provides an initial evidence base for consideration of the requirement to revoke, amend or declare any AQMAs. Those numbers in **bold** indicate monitoring within a year which has exceeded the Air Quality Objective of $40\mu\text{g}/\text{m}^3$. Figure 2.2 shows the monitoring trends over the past five years in the AQMA.

⁵

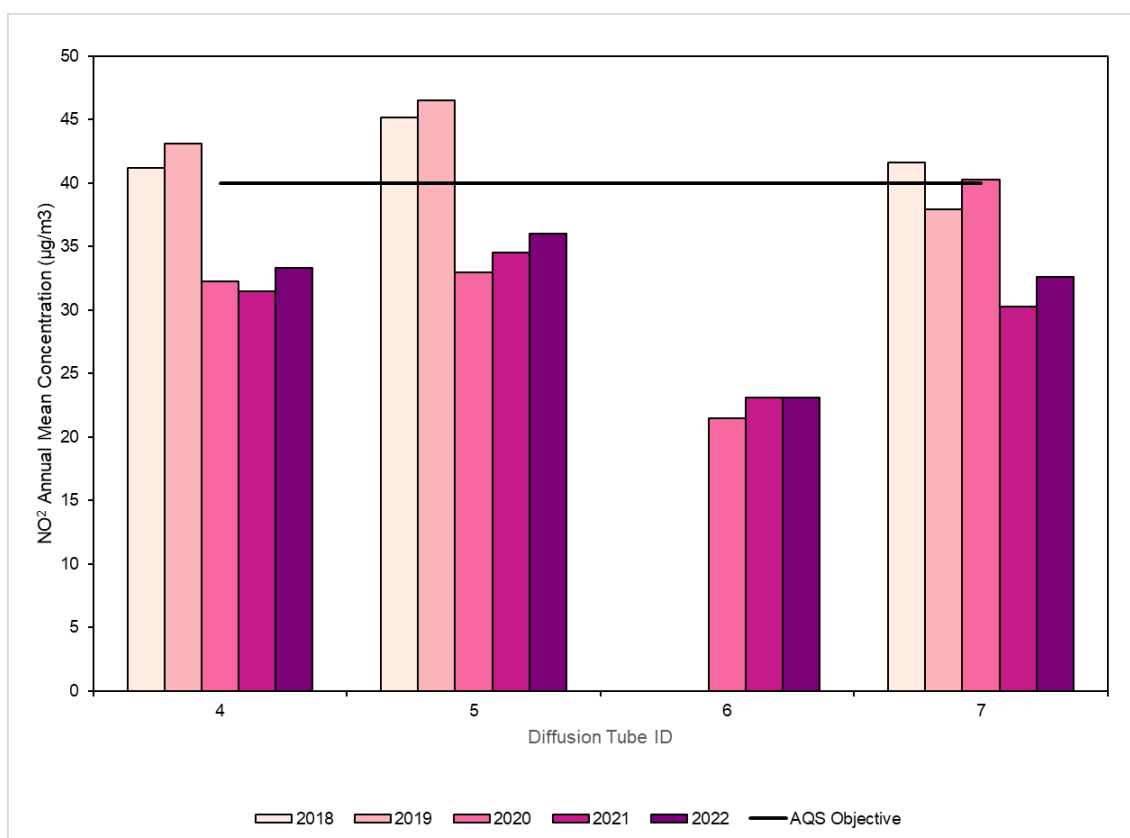
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationandhouseholdestimatesenglandandwalescensus2021>

Table 2.2 – NO₂ Monitoring within Cheltenham Borough Council AQMA

Site ID	Location	Annual Mean Concentration (µg/m ³)				
		2018	2019	2020	2021	2022
CM1	Swindon Road	32.7	36	24.7	25.3	27.0
4	2 Gloucester Road	41.2	43.1	32.3	31.5	33.3
5	422 High St	45.2	46.5	32.9	34.5	36.0
6	48 Swindon Road			21.5	23.1	23.1
7	New Rutland Court	41.6	37.9	40.3	30.3	32.6

Concentrations in **bold** show those locations which have exceeded the AQS objective of 40µg/m³

Figure 2.2 – Monitoring Trends in Cheltenham AQMA



Within the AQMA, there were no exceedances of the 40µg/m³ Air Quality Strategy (AQS) objective⁶ for concentrations of annual mean NO₂ in 2020 or 2021. This is likely as a result of changes in traffic patterns as a result of the COVID-19 pandemic.

In addition to future years monitoring results, any changes made to the existing monitoring network within the borough will be detailed and justified within subsequent

⁶ <https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits>

ASRs. The monitoring network serves as an ongoing indicator for changing NO₂ trends within the borough and will be essential for the assessment of implementation for the measures detailed within this AQAP.

2.4 Modelled PM_{2.5} Concentrations within AQMA

PM_{2.5} is a pollutant of increasing concern. While the AQMA has not been specifically declared for this pollutant, analysis and discussion are provided throughout the AQAP with regards to PM_{2.5} emissions/concentrations. No LAQM reference method automatic monitoring of PM_{2.5} was completed by Cheltenham Borough Council for the entirety of 2022. However, monitoring commenced using BAMS in November 2022 and monitoring is completed by AQMesh ‘low-cost sensor’ units. The detailed modelling assessment included in Appendix C: Detailed Modelling Report has modelled predicted PM_{2.5} concentrations within the AQMA. These are shown in Table 2.3 below. At the time of writing, the annual average guideline limit is 20µg/m³⁷ with a target of 10µg/m³ to be achieved as an annual mean by 31st December 2040.

Table 2.3 – Modelled PM_{2.5} Concentrations in AQMA (2019)

Modelled Receptor	Location (approx. Postcode)	Annual Mean Concentration (µg/m ³) 2019
51	GL51 9HD	12.7
52	GL51 9ER	12.5
53	GL51 8DW	12.3
54	GL51 8PQ	12.2
55	GL51 8DW	12.9
56	GL51 9ER	13.1
57	GL50 3HZ	13.9
58	GL50 3HX	13.8
59	GL50 3JA	12.8
60	GL50 3JA	14.3
61	GL50 3HU	13.7
62	GL50 3NZ	12.0

As shown, the modelled predicted concentrations within the AQMA are currently below the annual average objective of 20µg/m³ but above the objective to be achieved by 2040. The highest modelled concentration at Receptor 60 is closest to the monitoring

⁷ https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf

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which is being undertaken at 422 High St. Current PM_{2.5} results suggest annual level is around 10µg/m³.

Please refer to the latest ASR from Cheltenham Borough Council⁸ for full details of monitoring. Additional information on the modelling of PM_{2.5} is included within the detailed modelling assessment included in Appendix C: Detailed Modelling Report.

⁸ https://www.cheltenham.gov.uk/downloads/download/693/air_quality_reports

3 Cheltenham Borough Council's Air Quality Priorities

This chapter presents the main drivers and the approach taken by CBC for the development and subsequent selection of measures included within this AQAP. Included within this section are descriptions of the existing strategies and policies that relate to air quality within the borough.

A source apportionment study has been completed across the borough, focusing on the AQMA. This study has allowed the most significant sources of oxides of Nitrogen (NO_x) vehicle contributors to be identified. NO_x are predominantly emitted into the atmosphere in the form of nitric oxide (NO) which is then converted to nitrogen dioxide (NO₂) through chemical processes in the atmosphere.

In conjunction, with the strategies and policies that are currently in place, the conclusions of this apportionment exercise have been used to identify and prioritise the action measures presented within Table 5.1.

3.1 Public Health Context

Mounting scientific evidence shows the scale of the impact of poor ambient air quality on health. In December 2020, the first case of air pollution being ruled as the cause of death was recorded for nine-year old, Ella Kissi-Debrah as a result of failure to reduce pollution levels to legal limits within the London Borough of Lewisham. Poor air quality is considered to be a significant contributory factor to the loss of life, shortening lives by an average of 5 months. The Committee on the Medical Effects of Air Pollution (COMEAP)⁹ provides advice to Government on the setting of air quality standards, and increasingly has sought to consolidate evidence on the health burden and impacts of various pollutants, both in single occurrence and pollutants in combination. The current range of estimate for annual mortality burden for man-made air pollution in the UK is estimated to be between 28,000 – 36,000 deaths.

⁹ <https://www.gov.uk/government/collections/comeap-reports>

Local authorities have a range of powers which can effectively help to improve air quality. However, the involvement of public health officials is crucial in playing a role to assess the public health impacts and providing advice and guidance on taking appropriate action to reduce exposure and protect the health of people in Cheltenham.

The Air Quality Indicator in the Public Health Outcomes Framework (England) provides further impetus to join up action between the various local authority departments which can impact on the delivery of air quality improvements. The “Air Quality – A Briefing for Directors of Public Health¹⁰” document published in March 2017 provides a one-stop guide to the latest evidence on air pollution, guiding local authorities to use existing tools to appraise the scale of the air pollution issue in its area. It also advises local authorities how to appropriately prioritise air quality alongside other public health priorities to ensure it is on the local agenda.

The document comprises the following key guides:

- Getting to grips with air pollution – the latest evidence and techniques
- Understanding air pollution in your area
- Engaging local decision-makers about air pollution
- Communicating with the public during air pollution episodes
- Communicating with the public on the long-term impacts of air pollution
- Air Pollution: an emerging public health issue: Briefing for elected members

Besides NO₂, there is an increasing focus on fine particulate matter. PM_{2.5} is a pollutant of concern meaning particulate matter which is 2.5 microns or less in diameter. The AQMA has not been declared for PM_{2.5} and the modelling as part of the detailed assessment has shown predicted levels below the annual mean objective of 20µg/m³.

The Public Health Outcomes Framework data tool¹¹ compiled by Public Health England quantifies the mortality burden of PM_{2.5} within England on a county and local

¹⁰ <https://www.local.gov.uk/publications/air-quality-briefing-directors-public-health>

¹¹ <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1>

authority scale. The 2021 fraction of mortality attributable to PM_{2.5} pollution, i.e., the percentage of total deaths due to pollution, in Cheltenham is 5.5%. This is the same as the national average, but higher than the regional average for the South West of 5.1%. It should be noted that this figure only accounts for one pollutant (PM_{2.5}) for which stronger scientific evidence on links with mortality exist, and not NO₂ for which the AQMA is declared. This means that the true mortality burden could be even higher.

Furthermore, following a review of research into the mortality burden associated with the air pollution mixture rather than single pollutants acting independently, the Committee on the Medical Effects of Air Pollutants (COMEAP) are reviewing the legitimacy of linking deaths to one specific pollutant.

The Gloucestershire Air Quality and Health Strategy (2019)¹² sets out the key aims of the strategy for dealing with air quality:

- Bring about a significant and measurable improvement to air quality in Gloucestershire through joined up working to implement cost-effective measures.
- Reduce the impact of poor air quality on the health of residents, workers and visitors, and the environment.
- Raise public awareness of air quality, its impact on health and personal protection measures in order to promote sustainable behaviour change.
- Increase our understanding of the state of air quality in Gloucestershire and the impact of measures to improve air quality.
- Meet and exceed statutory obligations and national targets on air quality.

The draft Gloucestershire Joint Health and Wellbeing Strategy 2019-2030¹³ set out the key priorities that the health and wellbeing board sought to deliver. The seven priorities are set out below:

- Physical activity

¹²<https://glostext.gloucestershire.gov.uk/documents/s52324/Gloucestershire%20Air%20Quality%20and%20Health%20Strategy%20v.%204.pdf>

¹³ <https://glostext.gloucestershire.gov.uk/documents/s52312/Draft%20JHWS%20May%20HWP.pdf>

- Adverse Childhood Experiences (ACEs)
- Mental wellbeing
- Social isolation and loneliness
- Early years (Best Start in Life)
- Housing

While these priorities are not directly aiming to tackle air quality, there are potential synergies, for example, steps to increase the levels of ‘active travel’ and / or the move towards public transport, will positively impact on both physical activity levels and air quality. In addition, reducing air pollutant concentrations will contribute to the overall aims of the strategy, which are to have a positive impact on the health and wellbeing of the population and reduce health inequalities.

The NHS Long Term Plan (2019) includes a specific ambition for the NHS to reduce air pollution from all sources, and specifically to cut business mileages and NHS fleet pollutant emissions by 20% by 2023/24.

3.2 Planning and Policy Context

This Action Plan outlines the Council’s plan to effectively tackle air quality issues within its control; however, it is recognised there are numerous existing and impending policies and strategies adopted at local, regional and national level that can exert significant effects, both positive and negative, on air quality across Cheltenham. It is important that these plans and strategies are identified and taken into consideration at an early stage in the development of the plan. These will aid the establishment of the context in which specific options for improving air quality can be implemented.

Whilst certain policies and/or strategies may be outside of the influence of Cheltenham Borough Council, there are a number of related policies and strategies at local and regional levels that can be tied directly with the aims of this AQAP. Some of these are directly focused on air quality improvements within Cheltenham, whilst others relate to transportation issues and therefore have the added benefit of contributing to overall improvements in air quality across the borough.

Reviewing these strategies and policies can help to prevent duplication of work within the AQAP, enabling a focus on any *additional* measures that can be taken, that contribute to the overall aims of the AQAP (and potentially other strategic objectives),

This section outlines the strategies and policies that have the most significant potential to impact on pollutant concentrations within Cheltenham. Given their importance, the majority of measures listed below have also been included as action measures within this Action Plan.

The most relevant policies and strategic documents are detailed below.

Clean Air Strategy 2019

The Clean Air Strategy¹⁴ sets out the case for action at a national level, identifying a number of sources of air pollution within the UK including road transportation (relevant in terms of the AQMA currently present within Cheltenham). It also sets out the actions required to reduce the impact upon air quality from these sources. It has been developed in conjunction with three other UK Government Strategies; the Industrial Strategy, the Clean Growth Strategy, and the 25 Year Environment Plan.

Key actions that are detailed within the strategy aimed at reducing emissions from transportation sources include the following:

- The publication of the Road to Zero strategy, which sets out plans to end the sale of new conventional petrol and diesel cars and vans by 2040
- New legislation to compel vehicle manufacturers to recall vehicles and non-road mobile machinery for any failures in emission control systems, and to take effective action against tampering with vehicle emissions control systems
- Develop new standards for tyres and brakes to reduce toxic non-exhaust particulate emissions from vehicles. [NB: This action would not necessarily target reductions in NO₂ for which the CBC AQMA has been declared].
- The encouragement of the cleanest modes of transport for freight and passengers
- Permitting approaches for the reduction of emissions from non-road mobile machinery, especially in urban areas

¹⁴ Department for Environment, Food and Rural Affairs (2019), Clean Air Strategy

UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations

Published in July 2017, the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)¹⁵ is the UK governments plan for bringing concentrations of NO₂ within statutory limits within the shortest possible time. It identifies that the most immediate air quality challenge within the UK is tackling the issue of NO₂ concentrations close to roads, especially within towns and cities. The plan identifies a number of local authorities that were required to complete feasibility studies to define NO₂ concentrations on road links which were identified by the national Pollutant Climate Mapping (PCM) model as exceeding the NO₂ annual mean AQS objective.

Cheltenham Borough Council were not one of the authorities identified. However, the UK Plan details a range of possible solutions to reduce NO_x emissions from vehicles, and therefore lower NO₂ concentrations. The actions detailed within the UK Plan include:

Implementation of Clean Air Zones (CAZs)

- New real world driving emissions requirements for light passenger and commercial vehicles
- Additional funding to accelerate the uptake of low emissions buses and also for the retrofitting of older buses
- Additional funding to accelerate the uptake of hydrogen vehicles and associated infrastructure
- New mandatory emissions standards for non-road mobile machinery
- Local cycling and walking investment plans

¹⁵ Department for Environment, Food and Rural Affairs, Department for Transport (2017), UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)

Gloucester, Cheltenham and Tewkesbury Joint Core Strategy (2011-2031)

The JCS¹⁶ is an important part of the development plan for Gloucester City, Cheltenham Borough and Tewkesbury Borough. It sets out the long-term vision and objectives for the area together with strategic policies for shaping new development. Strategic Objective 9, set out below is relevant to air quality, specifically the **bold** text.

Strategic Objective 9 – Promoting healthy communities

Promote development that contributes to a healthy population by:

- *Providing for good access to the countryside and all open spaces through the retention and development of a comprehensive green infrastructure network*
- *In partnership with others, creating stronger communities by reducing inequality and social exclusion, enhancing opportunities for high quality education, and thereby increasing social well-being*
- *In partnership with others, encouraging healthy lifestyles and a well society through access to key community facilities and services, including sport, recreation and leisure facilities, open spaces and sustainable transport, including public transport*
- ***Ensuring that environmental quality and air quality is protected***

Local Plan

The Cheltenham Plan was adopted on the 20th July 2020. The following policies within the plan are relevant to Air Quality:

POLICY BG2: COTSWOLD BEECHWOODS SPECIAL AREA OF CONSERVATION AIR QUALITY

Development which is likely to generate additional road traffic emissions to air which are capable of affecting the Cotswold Beechwoods SAC will be screened against the Habitats Regulations Assessment Framework in line with Natural England's guidance

¹⁶ [Joint Core Strategy](#)

'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001)'

POLICY EM2: SAFEGUARDING NON-DESIGNATED EXISTING EMPLOYMENT LAND AND BUILDINGS

Development proposals for a change of use of land and buildings currently or last in employment use (Note 1) will only be permitted where:

c) The applicant for planning permission can demonstrate that employment use creates unacceptable environmental or traffic problems which cannot be satisfactorily resolved.

POLICY HM3: LOSS OF RESIDENTIAL ACCOMMODATION

Development involving the loss of residential accommodation through the change of use or demolition of existing housing will not be permitted, except where: a) continued residential use is undesirable because of environmental conditions.

There are significant developments anticipated for the west of Cheltenham as part of the Local Plan. These include:

- Up to 4,000 residential properties to the North West of Cheltenham (this site straddles the border with Tewkesbury Borough). This development will also include 3 schools a small business park and a neighbourhood retail centre.
- The Golden Valley Development, west of Cheltenham will be a “garden community” including 3,700 homes and 2 million sq.ft of commercial space. This development forms a key part of the UK Government’s National Cyber Strategy and will include the 150,000 sq.ft National Cyber Innovation Centre. The media release says: “Sustainability will be a key element of the huge new project, which will target Net Zero Carbon. Smart technology coupled with innovative design and MMC will cut energy output and carbon impact across both the residential and commercial elements of the development.”
- Improvements to J10 of the M5 to an all-ways interchange is due to complete by late 2025. (Again this is outside the borough, but is likely to have a positive effect on traffic flow in the west of the town).

All these developments have or will include an Air Quality assessment and will only be approved where they can demonstrate that they would not result in a significant effect on air quality.

Local Transport Plan

The Cheltenham Transport Plan (CTP)¹⁷ is a long-held CBC plan to improve the quality of life in the town and increase its economic prosperity. The CTP was first considered by the local Civic Society in 2000 and was subsequently endorsed and adopted by the Borough Council as part of its Civic Pride Urban Design Framework within the Local Development Framework in 2008.

The Plan included an experimental scheme to minimise traffic around the area known as 'Boots Corner' for which roads on the approaches were only available to certain permitted vehicles as set out below:

Permitted vehicles:

- Buses
- Taxis
- Pedal Cycles
- Loading / Unloading 6pm - 10am

Authorised Vehicles:

- Private Hire Vehicles
- Vehicles accessing off-carriageway parking on Church Street*, accessing off-carriageway parking on Post Office Lane* and accessing / egressing off-carriageway parking on North Street within the Bus Gate restriction.
- Funeral vehicles registered by Gloucestershire County Council servicing St Mary's Church.
- Bullion Vehicles
- Post Office Vehicles

¹⁷ <https://www.gloucestershire.gov.uk/highways/major-projects-list/cheltenham-transport-plan/>

- General vehicle exemptions such as emergency service vehicles, maintenance vehicles, waste collection vehicles, military vehicles

It should be noted that Boots Corner is not within the AQMA. The outcomes of the Boots Corner test showed that the scheme made negligible difference to air pollution levels across the town. This is not necessarily surprising, as the scheme was not explicitly designed to improve air quality. However, some areas, closest to the trial restrictions, have experienced incidental improvements in air quality. Some of the diversion routes around the town centre, may have seen small increases in pollution, but all monitored sites were still well within legal limits.

‘Climate Emergency’ Declaration

In 2019, Cheltenham Borough Council declared a climate emergency and a commitment to be a carbon neutral Council and Borough by 2030. The ‘Carbon Neutral Cheltenham Report’ includes measures which will also help to reduce emissions from transport including ‘Zero Carbon Hubs’ an initiative to create decentralised futureproof centres promoting zero emissions mobility. These will include ‘micro-hubs’ among the communities of Cheltenham and larger interchanges at the periphery of the Borough.

Climate change action primarily deals with emissions of carbon dioxide (CO₂) and its equivalents, and the focus of this AQAP is on reducing NO₂ within the AQMA. However, there are links between the two disciplines as any reductions from transport emissions resulting from initiatives to combat climate change are also likely to reduce NO₂ emissions.

Cycling Infrastructure Plan

As part of the government’s national cycling and walking strategy, all local authorities in England are encouraged to produce a cycling and walking infrastructure plan (LCWIP). Gloucestershire County Council’s Transport Planning Team published theirs for Central Severn Vale in August 2020¹⁸. As shown in Figures 13 and 14 of that

¹⁸ <https://www.gloucestershire.gov.uk/media/55idcaly/combined-csv-background-report-20191205.pdf>

document, within and surrounding Cheltenham's AQMA, are proposed improvements including: advanced stop lines, early start for cyclists; 20 mph signage with roundels; traffic calming measures; and a Raised Tiger Crossing at the memorial gardens.

Connecting Cheltenham

The 2018 'Connecting Cheltenham' strategy aims to deliver Cheltenham's wider place shaping agenda and integrate new development into the existing transport network.¹⁹

This document includes details of bus routes and services including those in and around the AQMA.

Gloucestershire Air Quality and Health Strategy (2019)

As part of the Gloucestershire Air Quality and Health Strategy¹³, several measures have been identified which have synergies applicable to control of air quality within Cheltenham:

- Development of guidance and frameworks for planners and developers
- Consultation into planning and policy strategy
- Identifying key infrastructure for active travel improvements
- Review charging infrastructure and related business opportunities
- Prioritise funding opportunities for Gloucestershire County Council's electric car charging budget
- Keep up to date with evolving ULEV technology
- Develop a communications plan to promote the uptake of ULEVs
- Identify partnerships with key employers in Gloucestershire
- Utilise parking incentives to encourage low emission vehicle uptake
- Improve standards of fleet vehicles through fleet replacement policies

¹⁹ https://www.cheltenham.gov.uk/downloads/download/1747/connecting_cheltenham

- Improve standards of fleet vehicles through contracting arrangements
- Utilise mechanisms to promote the adoption of low emission vehicles for all public transport fleet (including taxis and private hire vehicles)
- Provide opportunities for training and education to promote cleaner driving
- Utilise smart technology for vehicles to support cleaner driving
- Sign-up to and promote schemes for businesses which promote cleaner driving

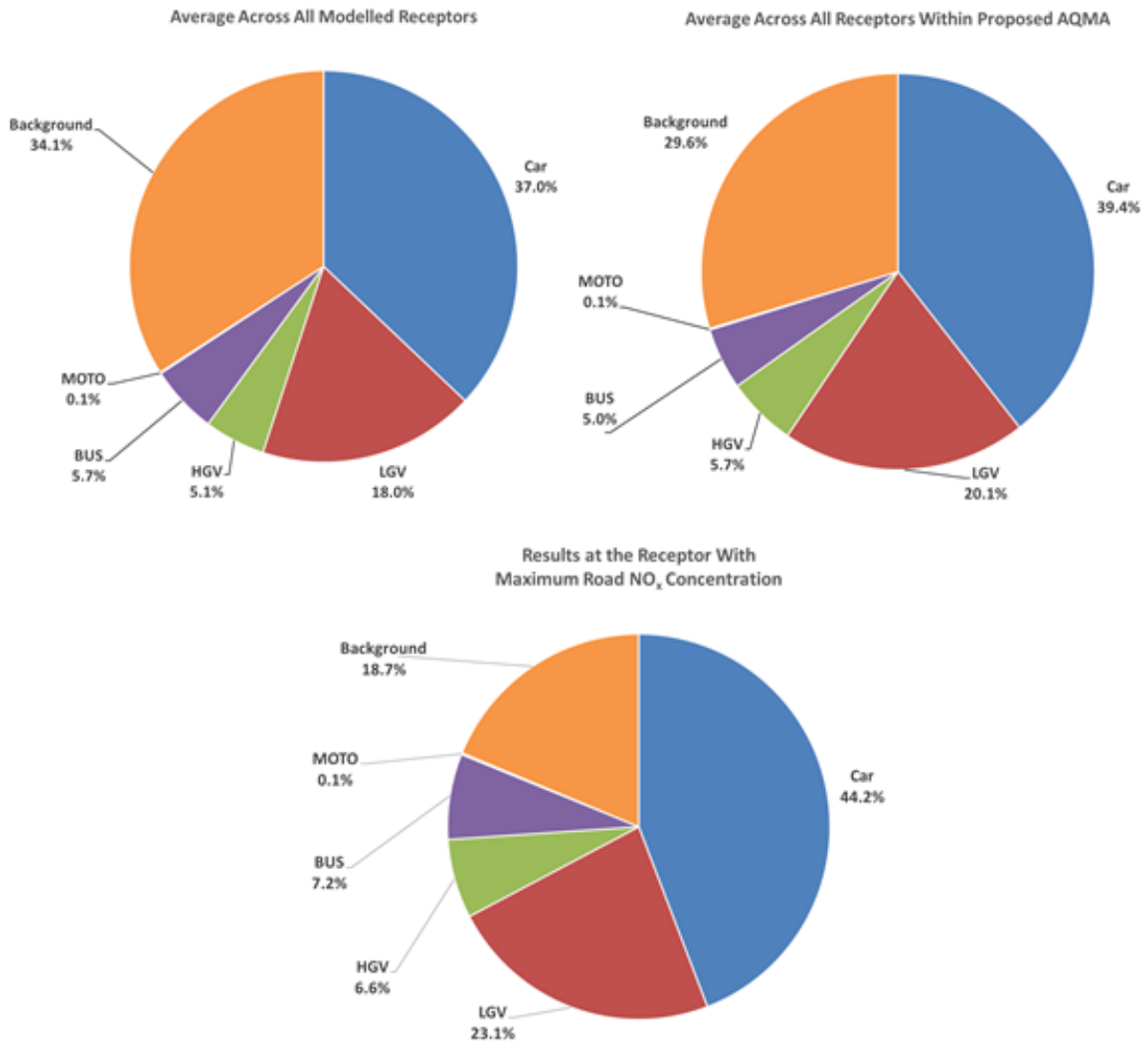
3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within CBC's area.

A source apportionment exercise was carried out in 2021 for a baseline year of 2019. A source apportionment exercise was carried out by Cheltenham Borough Council using a baseline year of 2019, to discount any changes arising in 2020 or 2021 as a result of the effects of changes in vehicle patterns arising from restrictions associated with COVID-19, which may not be representative of future year concentrations.

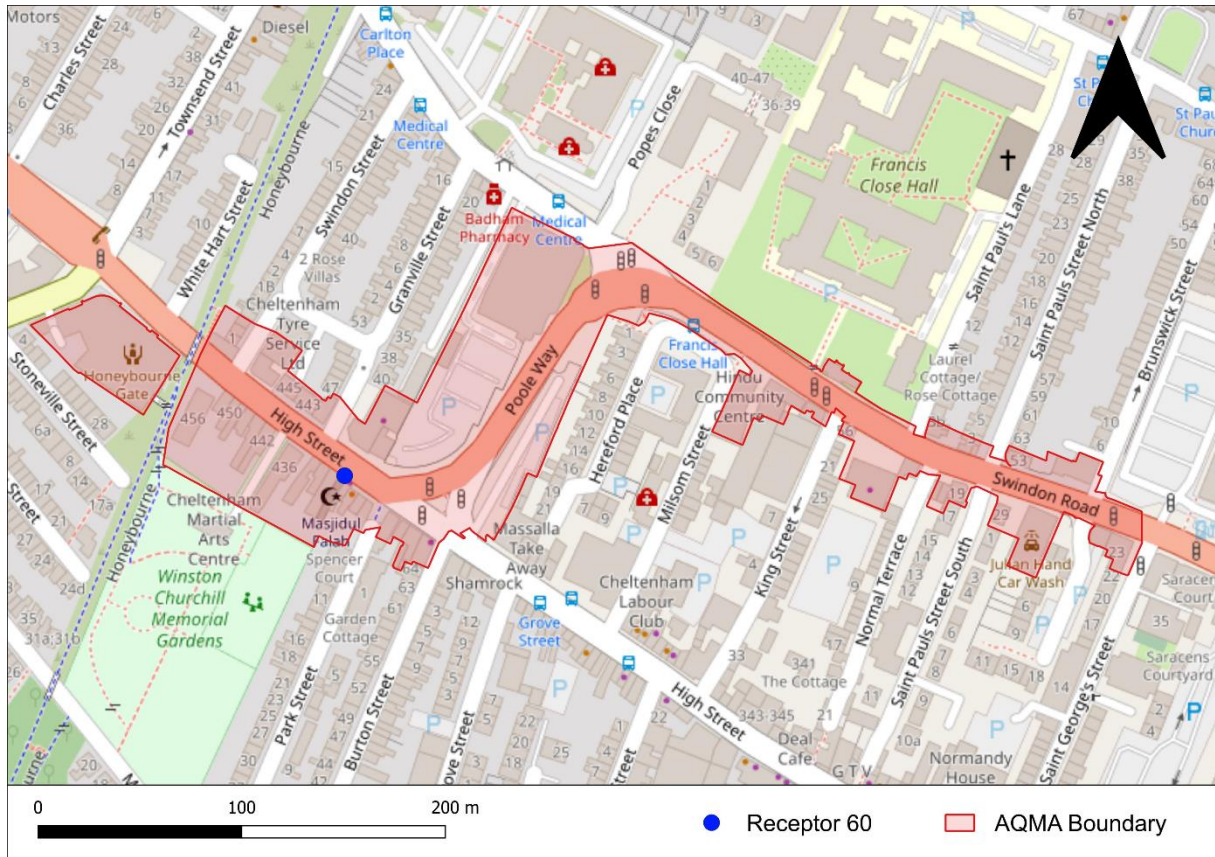
Table 3-1 – Detailed Source Apportionment of NO_x Concentrations

Results	All Vehicles	Cars	LGV	HGV	Bus & Coach	Motorcycle	Background
Average Across all Modelled Receptors							
NO _x Concentration (µg/m ³)	35.4	19.9	9.7	2.7	3.0	0.1	18.3
Percentage of total NO _x (%)	65.9	37.0	18.0	5.1	5.7	0.1	34.1
Percentage Road Contribution to total NO _x (%)	100.0	56.2	27.4	7.7	8.6	0.2	-
Average Across all Receptors within AQMA							
NO _x Concentration (µg/m ³)	48.0	26.9	13.7	3.9	3.4	0.1	20.2
Percentage of total NO _x (µg/m ³)	70.4	39.4	20.1	5.7	5.0	0.1	29.6
Percentage Road Contribution to total NO _x (µg/m ³)	100.0	56.0	28.6	8.1	7.2	0.2	-
At Receptor with Maximum Road NO_x Concentration							
NO _x Concentration (µg/m ³)	91.5	49.7	26.1	7.5	8.1	0.2	21.1
Percentage of total NO _x (µg/m ³)	81.3	44.2	23.1	6.6	7.2	0.1	18.7
Percentage Road Contribution to total NO _x (µg/m ³)	100.0	54.3	28.5	8.2	8.8	0.2	-



The Max Receptor identified in the detailed dispersion modelling study was Receptor 60, which had a modelled annual mean NO₂ of 56.7µg/m³. The receptor was located along a façade of a residential property within the existing AQMA that immediately fronts onto a stretch of the A4019 – Hight Street susceptible to congestion due to the convergence of high capacity and town centre roads (M5, A4019 – Tewkesbury Road, A4019 – High Street, A4019 – Swindon Road and High Street). The location of the Max Receptor within Cheltenham AQMA is shown in Figure 3.1 below.

Figure 3.1 – Max Receptor Location within Cheltenham AQMA



As the modelling study used 2019 as the baseline year, background pollution maps for the same year obtained from UK-Air²⁰ were used for NO₂ Source Apportionment. The calculations are summarised in Table 3.2 and Table 3.3 below.

Table 3.2 – NO₂ Source Apportionment Calculations – Cheltenham AQMA

Calculation	Concentration (µg/m ³)
Total Background NO ₂ [TB-NO ₂]	15.3
Total Background NO _x [TB-NO _x]	21.1
Regional Background NO _x [RB-NO _x]	5.0
Local Background NO _x [LB-NO _x]	16.1
Regional Background NO ₂ [RB-NO ₂]	3.6
Local Background NO ₂ [LB-NO ₂]	11.7
Total Max Modelled NO ₂ [T-NO ₂]	56.7
Local NO ₂ Contribution [L-NO ₂]	41.4

²⁰ <https://uk-air.defra.gov.uk/data/lqgm-background-maps?year=2018>

Table 3.3 – NO₂ Source Apportionment from Vehicles at Max Receptor in Cheltenham AQMA

Calculation	NO ₂ Contribution (µg/m ³)
Cars	22.5
LGV	11.8
HGV	3.4
Bus and Coach	3.6
Motorcycle	0.1

The above Table and Figures detail the source apportionment results for NO_x concentrations at modelled receptors for three scenarios:

- The average NO_x contributions across all modelled locations representative of sensitive human exposure (called 'receptors'). This provides useful information when considering possible action measures to test and adopt.
- The average NO_x contributions within the AQMA. This will inform potential prominent NO_x contributors present within the identified area of exceedance and therefore be useful when testing and adopting action measures.
- The location where the maximum road NO_x concentration has been predicted within the AQMA. This is likely to be in the area of most concern within the proposed AQMA and so a good place to test and adopt action measures. Any gains predicted by action measures are likely to be greatest at this location and so would not represent gains across the whole modelled area.

When considering the average NO_x concentration across all modelled receptor locations, the following observations were found:

- Road traffic accounts for 35.4µg/m³ (65.9%) of total average NO_x (53.7µg/m³), with background accounting for 18.3µg/m³ (34.1%);
- Of the total road NO_x, Cars are highest contributing vehicle class accounting for 56.2% (19.9µg/m³);
- LGVs are found to be the second highest contributing vehicle class accounting for 27.4% (9.7µg/m³);
- HGVs and Buses account for similar total road NO_x (HGVs – 7.7% (2.7µg/m³) and Buses 8.6% (3.0µg/m³); whereas

- Motorcycles are found to contribute <1%.

When considering the average NO_x concentration at modelled receptor locations within the AQMA, the following observations were made:

- The predicted road traffic NO_x percentage contribution is similar in comparison to all receptor locations, accounting for 70.4% (48µg/m³) of the total NO_x (68.3µg/m³), with the background component percentage contribution 29.6% (20.2µg/m³);
- Of the total road NO_x, Cars account for a similar contribution in comparison to contributions modelled at all receptor locations, and are still found to be the highest contributing vehicle class accounting for 56.0% (26.9µg/m³);
- LGVs are similarly found to be the second highest contributing vehicle class, with a consistent percentage weighting observed (28.6% (13.7µg/m³));
- Percentage contributions from HGVs were also found to be similar in comparison to contributions modelled for all receptor locations, and remain third in terms of overall ranking (8.1% (3.9µg/m³)) - suggesting a marginal influence of HGVs in exceedance areas across the modelled domain; and
- Percentage contributions from Buses and Motorcycles remain stable in comparison to contributions modelled at all receptor locations (Buses – 7.2% (3.4µg/m³) and Motorcycles <1%).

When considering the modelled receptor location at which the maximum road NO_x concentration has been predicted:

- Road traffic accounts for 81.3% (91.5µg/m³) of the total averaged NO_x (112.6µg/m³) – highlighting contributions from road traffic to be the core component in areas of exceedance;
- Of the total road NO_x, cars are found to be the highest contributing vehicle class accounting for 54.3% (49.7µg/m³). However, in comparison to contributions within the AQMA as a whole and across the whole domain, this percentage is slightly lower, suggesting influence from other vehicle classes in this location;

- LGVs are found to be the second highest contributing vehicle class accounting for 28.5% ($26.1\mu\text{g}/\text{m}^3$). This observed percentage contribution is consistent with observations found across the whole domain and within the AQMA;
- HGVs account for 8.2% ($7.5\mu\text{g}/\text{m}^3$) of the total road NO_x . This is an increase in comparison to the contribution observed across the whole domain and suggests an influence on exceedance within the AQMA;
- Buses account for 8.8% ($8.1\mu\text{g}/\text{m}^3$) of the total road NO_x – a slight increase in percentage contribution in comparison to the wider domain - suggesting an influence on exceedance within the AQMA; and
- Motorcycles are similarly found to contribute <1%.

The NO_x source apportionment exercise demonstrates a largely consistent ranking of contributing vehicle classes exhibited throughout all scenarios (Cars, LGVs, HGVs, Buses and Coaches, and Motorcycles), where Cars primarily (alongside LGVs) are found to be the main contributors to total road NO_x concentrations across Cheltenham.

Whilst comparing modelled contributions at identified receptor locations within the AQMA against the wider modelled domain, Cars were observed to employ a slightly reduced influence on total road NO_x concentrations within the AQMA. Slight increases to total road NO_x contributions from both LGVs and HGVs were observed, demonstrating a larger degree of influence. Increases to both LGV and HGV total road NO_x contributions within the AQMA is owed to the strategic road network the area of exceedance is centred on (i.e. the A4019 – Tewkesbury Road, A4019 – High Street, A4019 – Swindon Road and High Street) – which connects the M5 (among other high capacity roads) to the Town Centre.

However, whilst taking the above into consideration, the observed variance in percentage contributions between vehicle classes largely did not change the observed ranking of contributing vehicle class exhibited throughout all scenarios. This suggests volume of traffic is considered to be the key contributor to elevated levels of NO_2 annual mean concentrations within the AQMA.

3.4 Required Reduction in Emissions

In line with the methodology presented in Box 7.6 of TG(22)²¹, the necessary reduction in Road NO_x emissions required to bring the current AQMA into compliance is shown in

Table 3.4. This has been completed at the maximum annual mean concentration location, either monitored or modelled within the AQMA. The TG(22) procedure calculates the required reduction of road NO_x to achieve a total NO₂ concentration of 40µg/m³. A more stringent figure of 36µg/m³ for total NO₂ concentration has been used (10% lower than the annual mean AQS objective) to account for uncertainties with dispersion modelling and the degree of potential inaccuracy with diffusion tube monitoring. This will ensure that an AQMA is only revoked once we are confident that NO₂ concentrations are below the AQS objective.

Table 3.4 – NO_x Reduction Required in NO_x Emissions to meet AQO for Annual Mean NO₂ – Cheltenham AQMA

Metric	Concentration (µg/m ³)
Worst-Case Relevant Exposure NO ₂ Concentration	56.7
Background NO _x	21.1
Background NO ₂	15.3
Road NO _x (Current)	91.7
Road NO _x (Required to achieve an NO ₂ concentration of 36µg/m ³)	41.5
Required Road NO_x Reduction (µg/m³)	50.2
Required % Reduction	54.7%

3.5 Key Priorities

Based on the information presented within Section 4 we have defined the following areas for action. Our first priority is to bring about and maintain compliance with the AQS objectives, this is proposed to be achieved through the below priority target areas.

²¹ <https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/>

Priority 1 - Transport

The main source of air pollution leading to the declaration of the AQMA is road transport emissions. Therefore, reducing transport emissions are the key priority. Our approach focuses on areas where Cheltenham Borough Council has direct control (e.g., planning and procurement of outsourced functions) and areas where measures can be implemented via a partnership with Gloucestershire County Council or others.

As the roads contributing to pollutant concentrations which result in exceedance of the annual average NO₂ objective are not managed by National Highways, this Relevant Public Authority has not been engaged with for the purpose of preparing this AQAP.

Priority 2 - Planning and Infrastructure

The Local Plan and its policies set out the considerations that will be applied by Cheltenham Borough Council for all development proposals. The Council will work with developers and partner organisations to ensure the delivery of infrastructure, services and community facilities necessary to develop and maintain sustainable communities. This will not only apply to air quality but all relevant environmental aspects. Further Section 106 agreements will be sought to secure funding for future mitigation measures as appropriate where development will increase pollutant concentrations.

Priority 3 - Policy Guidance

Existing strategies and policies adopted by Cheltenham Borough and Gloucestershire County Councils are key mechanisms for reducing emissions across the borough. Transport is the main source of NO_x emissions, and therefore NO₂ concentrations, within the AQMA. For effective reductions in NO_x emissions, in addition to the implementation of the measures outlined within the AQAP, future revisions of Transport Plans, Freight Strategies, Climate Change Strategies, Cycle Strategies etc., should all be completed with potential air quality impacts taken into account.

Development of a standalone Air Quality Strategy is proposed as part of this Action Plan.

Priority 4 - Public Health and Wellbeing Behavioural Change

As detailed in Section 3.1, air pollution has a detrimental impact on public health. Therefore, improving air quality within the borough is a key priority. The main sources of air pollution in areas of public exposure in Cheltenham are from vehicle emissions. Aside from restricting vehicle usage through measures such as Clean Air Zones / Low Emission Zones, the most effective way to achieve a reduction in vehicle numbers is to change the attitudes and behaviour of the population towards travel. Cheltenham Borough Council should encourage and facilitate these changes through implementing a suite of interventions that have been informed by insights into the key factors affecting travel behaviour.

Measures will include education and awareness raising alongside schemes which incentivise change. Improving air quality to protect public health requires a wide-reaching perspective which is not specific to the AQMA but instead aims to have a wider impact across the borough.

Priority 5 - Air Quality Monitoring

Currently, NO₂ is monitored across Cheltenham Borough using passive diffusion tubes, a continuous monitoring station and AQMesh sensors as detailed within the ASR. Air quality monitoring is a useful way to continually assess the extent of air pollution in Cheltenham. It also helps to measure the impact of implementing measures to reduce emissions, and as an evidence base for AQMAs to be revoked.

4 Development and Implementation of Cheltenham AQAP

4.1 Consultation and Stakeholder Engagement

In developing/updating this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995, as amended by the Environment Act (2021), requires local authorities to consult the bodies listed in Table 4.1.

4.1.1 The response to our consultation stakeholder engagement is given in Measure Quantification – Engage with Royal Mail to move toward low emissions Fleet

It has been assumed, based on the number of spaces at the Royal Mail depot on Swindon Road, that there is capacity for 81 LGVs to use this location. While there may be more frequent trips to and from the depot, it has been assumed that each of these spaces is used for travel in and out once per day, resulting in 162 LGV movements from the depot.

The EFT has been used to calculate the change of 162 LGVs becoming Euro VI rather than the default fleet (which is made up of older vehicles). Comparatively, when all LGVs are Euro VI, there is a 54% decrease in emissions compared to the standard fleet.

Detailed dispersion modelling was not completed, but a simple method using the NO_x to NO₂ calculator was used to assess the change in emissions and its potential effect on concentrations. While emissions do not equal concentrations, this does give an indication of what change there may be at the highest receptor as a result of this measure.

The LGV source apportionment of NO₂ concentrations within the AQMA as identified in Table 3.3 is 11.8µg/m³. Assuming this reduction occurs in line with the EFT calculation, this would result in a reduction in the AQMA of **6.4µg/m³**.

4.1.2 Measure Quantification – Expand the Existing Arle Court Park and Ride

The changes will see the number of parking spaces at the site increase from 576 to 980 and buses will be able to enter and exit the site directly from the westbound A40 carriageway.

Assuming every parking space is used and thus displaces vehicle trips within the AQMA this would result in a reduction of 664 two-way trips within the AQMA. This does not account for any increases in bus movements.

As with the above measure, detailed dispersion modelling was not completed, but a simple method using the NO_x to NO₂ calculator was used to assess the change in emissions and its potential effect on concentrations. While emissions do not equal concentrations, this does give an indication of what change there may be at the highest receptor as a result of this measure. The table below shows the calculations undertaken and potential reductions.

Table 6.2 – Indicative Estimated Reduction in Emissions as a result of Arle Court Park and Ride Expansion

Max Road NO _x at a Receptor (µg/m ³)	91.3
Vehicle NO _x Emissions on Poole Way (g/km/s)	0.06023
Emissions reduction from 664 fewer LDVs (g/km/s)	0.00231
Emissions reduction as a percentage (%)	0.04
Reduction in NO _x Emissions (µg/m ³)	3.51
Reduced Total Road NO _x (µg/m ³)	87.99
Background NO _x (µg/m ³)	21.1
Total NO ₂ concentration at worst case receptor without measure (µg/m ³)	56.7
Total NO ₂ concentration at worst case receptor with measure (µg/m ³)	55.42
Reduction in concentrations (µg/m ³)	1.28

4.1.3 Measure Quantification – Phase out around 500 Euro V and older Taxis and replace with Euro VI vehicles.

Using the Emissions Factors Toolkit user Euro Input option, emissions from Euro V vehicle and Euro VI vehicles can be easily quantified to account for the change in 500 Euro V taxis becoming 500 Euro VI taxis.

Cheltenham Borough Council

As with the above measure, detailed dispersion modelling was not completed, but a simple method using the NO_x to NO₂ calculator was used to assess the change in emissions and its potential effect on concentrations. While emissions do not equal concentrations, this does give an indication of what change there may be at the highest receptor as a result of this measure. The table below shows the calculations undertaken and potential reductions.

Table 6.3 – Indicative Estimated Reduction in Emissions as a result of Measure for Additional Euro VI Taxis

Max Road NO _x (µg/m ³)	91.294318
AADT total on Poole Way	14008
% of vehicles which could move from Euro V to Euro VI (i.e. 500 as a % of vehicles on Poole Way)	4%
Emissions from 500 Euro V taxis (g/km/s) (split 50/50 cars and black cabs)	0.0015
Emissions from 500 Euro VI taxis (g/km/s) (split 50/50 cars and black cabs)	0.0012
Reduction in Euro VI taxis compared to Euro V (%)	15
15% of 4% (i.e. the potential reduction in emissions on Poole Way from the 500 vehicles which would change) (%)	0.53%
Change in concentrations (µg/m ³)	0.48
Total Road NO _x with Measure in Place (µg/m ³)	90.81
Background NO _x (µg/m ³)	21.1
Total NO ₂ concentration at worst case receptor without measure (µg/m ³)	56.68
Total NO ₂ concentration at worst case receptor with measure (µg/m ³)	56.5
Reduction in concentrations (µg/m ³)	0.18

4.2 Cost Benefit Analysis of Measures

4.2.1 Methodology

Using the above assumptions around the quantitative pollution reduction and assumed costs, each measure was given a score as set out below.

Table 6.4 – Cost Score

Estimated Cost of Measure	Score
< £10k	1
£10k - £50k	2
£50k - £100k	3
£100k - £500k	4
£500k - £1m	5
£1m - £10m	6
> £10m	7

Table 6.5 – Benefit Score

Estimated Reduction in Pollutant Concentrations	Score
>0.5µg/m ³	1
0.5-1 µg/m ³	2
1-2 µg/m ³	3
2-3 µg/m ³	4
3-4 µg/m ³	5
4-5 µg/m ³	6
>5 µg/m ³	7

Using the scores above, the below matrix was implemented to work out the cost-benefit. Higher scores are awarded for those measures which are cheapest with the greatest effect, with the lowest scores awarded for those which will be costly with limited reduction in pollution.

Table 6.6 – Cost Benefit Scoring Matrix

		Estimated Reduction in Pollutant Concentrations						
		<0.5 µg/m ³	0.5-1 µg/m ³	1-2 µg/m ³	2-3 µg/m ³	3-4 µg/m ³	4-5 µg/m ³	>5 µg/m ³
Cost of Measure	< £10k	6	8	10	12	14	16	18
	£10k - £50k	5	6	8	10	12	14	16
	£50k - £100k	4	5	6	8	10	12	14
	£100k - £500k	3	4	5	6	8	10	12
	£500k - £1m	2	3	4	5	6	8	10
	£1m - £10m	1	2	3	4	5	6	8
	>£10m	0	1	2	3	4	5	6

The analysis should also account for the feasibility of implementing the measures, with those likely to progress given a higher priority than those which are acknowledged to be a challenge to implement. The feasibility score factors in local influences such as political backing, accessibility to funding options and resources available. As such, each measure was assigned a 'Feasibility score based on the table below. The score from the matrix was multiplied by this score.

Table 6.7 – Feasibility Scores

Feasibility Score	Score
Measure has already been started and just requires progressing	7
Very easy to implement, and political good will towards this, sufficient resources	6
Easy to implement, general political goodwill and available resources	5
Possible to implement but may require some learning/campaigning, moderately time intensive	4
Possible to implement but not straightforward and will require some learning/campaigning, moderately time intensive	3
Challenging to implement, would require some campaigning, time intensive	2
Very difficult to implement, no political appetite, time and resource intensive	1

4.2.2 Cost-Benefit Analysis

Following the above assessment, it has been possible to rank the measures by cost, benefit and feasibility, this is shown in Table 6.8 below. With the feasibility weighting meaning that measures which are the easiest to progress are scored higher, these are prioritised.

The scoring is calculated by calculating the matrix score in Table 6.6 and multiplying it by the feasibility score in Table 6.7. For example, if a measure was predicted to result in a $1.5\mu\text{g}/\text{m}^3$ reduction and would cost £15,000, it would get a matrix score of '8'. If the measure was considered to be quite difficult to implement it would get a feasibility score of '2'. '8 x 2' would give a total cost-benefit score of '16' for this measure. This final score is arbitrary and is only to be used in comparison to other measures using this same scoring system.

Using this method of multiplying the matrix score with the feasibility score gives greater weight to the feasibility of measures. This will allow the Council to identify where there are easy wins which can prioritise measures with the least resistance.

Table 6.8 – Cost Benefit Analysis of Measures

Prioritised Measure	Measure	Cost	Cost Score	Air Quality Effect Score	Matrix Score	Feasibility Score	Overall Score
1	Engage with Royal Mail to move toward low emissions fleet	£10k - £50k	6	7	16	5	80
2	Publish AQ monitoring results using low-cost AQMesh sensors on accessible website	£10k - £50k	6	1	5	7	35
3	Expand the existing Arle Court Park and Ride (https://www.gloucestershire.gov.uk/transport/park-ride-gloucester-and-cheltenham/changes-to-arle-court-park-ride/)	£50k - £100k	5	3	6	5	30
4	Public Health Awareness Campaigns as part of 'Air Quality Communication Strategy' around exceedances in AQMA	< £10k	6	1	6	5	30
5	Investigate Setting an annual mean target objective of 30ug/m3 NO2 instead of the National objective of 40ug/m3.	£50k - £100k	5	7	14	2	28
6	Investigate setting targets for PM10 and PM2.5 in line with WHO guidance, and emerging DEFRA requirements	£50k - £100k	5	7	14	2	28
7	Phase out around 500 Euro V and older Taxis and replace with Euro VI vehicles.	£10k - £50k	6	1	5	5	25
8	Develop partnership for last mile delivery in town centre, by sustainable transport.	£10k - £50k	6	1	5	5	25
9	Offer more EV charging points in the streets surrounding the AQMA	£10k - £50k	6	1	5	5	25
10	Extend the existing priority parking areas for Electric Vehicles within parking areas of AQMA	£10k - £50k	6	1	5	5	25
11	Adopt a Cheltenham Air Quality Strategy. Consider inclusion of measures from Clean Air Cheltenham's document and other community sources.	£10k - £50k	6	1	5	5	25
12	Review the Borough's Smoke Control Areas	£10k - £50k	6	1	5	5	25
13	Expand Monitoring for PM10 and PM2.5	£50k - £100k	5	1	4	6	24
14	Produce a biodiversity supplementary planning document	£50k - £100k	5	1	4	6	24
15	Emissions Policy for Private Hire Vehicles	£50k - £100k	5	1	4	6	24
16	Apply variable parking charges to incentivise use of EVs and Hybrids	£10k - £50k	6	1	5	4	20

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Prioritised Measure	Measure	Cost	Cost Score	Air Quality Effect Score	Matrix Score	Feasibility Score	Overall Score
17	Implement Junction improvements/traffic light changes in vicinity of AQMA	£100k - £500k	4	2	4	5	20
18	Engage with local NHS Trust to raise awareness of the effects of exposure to poor air quality where limits are exceeded.	< £10k	7	1	6	3	18
19	Improve data around AQMA (and beyond): A) Commission a study to understand purpose of car trips (including start/end points) through AQMA B) Single person or multiple occupancy survey C) How car parking generates trips through the AQMA	£50k - £100k	5	1	4	4	16
20	Develop strategic routes; consider, closure of certain town-centre roads to certain vehicle-types	£1m - £10m	2	7	8	2	16
21	Install Charging points at taxi ranks	£50k - £100k	5	1	4	4	16
22	Deliver a Schools AQ Project- Education and Awareness campaign	£100k - £500k	4	1	3	5	15
23	'Twenty is Plenty'	£100k - £500k	4	1	3	5	15
24	Promote a No Idling Policy	£10k - £50k	6	1	5	3	15
25	Increase Car Sharing in AQMA.	< £10k	7	1	6	2	12
26	Investigate delivery consolidation opportunities including Golden Valley Development to reduce deliveries through AQMA.	£10k - £50k	6	2	6	2	12
27	Promote Workplace Travel Plans	£10k - £50k	6	2	6	2	12
28	Promote Cycling and upgrade of Infrastructure in line with Severn Vale Cycling and Walking Infrastructure Plan	£100k - £500k	4	1	3	4	12
29	Install Rapid Charging Points for Electric Vehicles	£50k - £100k	5	1	4	2	8
30	Implement alternative fuel sources for business fleet within the council	£500k - £1m	3	1	2	4	8
31	Create Car-free Zones/Emissions Charging Zones	£1m - £10m	2	7	8	1	8

Appendix A: Response to Consultation.

Table 4.1 – Consultation Undertaken

Consultee	Consultation Undertaken
All neighbouring local authorities	No
DEFRA	Yes
The County Councils (if a District Council)	Yes
Other public authorities as appropriate, such as Public Health officials	Yes
Bodies representing local business interests and other organisations as appropriate	Yes

4.3 Steering Group

A steering group was established at the start of the update process to drive forward the development of the new AQAP. The core aim of the steering group was to identify measures for inclusion within the AQAP that would be effective both in terms of reducing NO₂ concentrations and also feasible in terms of implementation and delivery.

The steering group is composed mainly of Cheltenham Borough Council officers from those Services with an interest or potential impact on air quality and who may have an influence on the action measures being considered. Members included:

- Officers from Cheltenham Borough Council
- Representatives from Gloucestershire County Council in terms of Highways
- External consultants from Bureau Veritas
- Members of the public and;
- The local councillor.

The officers have and continue to provide guidance in their respective areas of expertise to ensure selection, and continual evaluation of the most appropriate measures.

Two steering group meetings took place in May 2021. A full list of attendees is given below.

Table 4.2 – Steering Group Members

Invitees	From
Sarah Clark	Public Protection, Cheltenham Borough Council
Yvonne Hope	Public Protection, Cheltenham Borough Council
Mike Redman	Public Protection, Cheltenham Borough Council
Councillor Max Wilkinson	Councillor/Cabinet Member, Cheltenham Borough Council
Clean Air Cheltenham	Residents Action Group
Philip Williams	Transport Commissioner, Gloucestershire County Council
Phillip Wright	Parking, Cheltenham Borough Council
Jackie Jobs	Strategic Transport, Cheltenham Borough Council
Tracey Crews	Planning Policy, Cheltenham Borough Council
John Rowley	Planning Policy, Cheltenham Borough Council
Philip Cameron	Highways, Gloucestershire County Council
Sue Weaver	Public Health (unable to attend but has subsequently commented)
Karen Watson	Fleet Management, CBC
Laura Tapping	Cheltenham Borough council - Climate Change Project Officer
Alex Mason	Public Protection, Cheltenham Borough Council
Daniel Clampin	Bureau Veritas
Alexandra Spence	Bureau Veritas
Gareth Jones	Public Protection, Cheltenham Borough Council
Jason Kirkwood	Licensing, Cheltenham Borough Council

The steering group includes officers from the local authority from: Licensing, Environmental Protection, Fleet, Transport and Environment, Planning, Regulatory Services, Climate Change, Planning, Highway and Transport.

Gloucestershire County Council was represented by their Highways Team. The local action group, Clean Air Cheltenham were represented at the meetings and local cabinet member for Climate Emergency, Max Wilkinson.

The steering groups set out an ambitious approach to tackling Air Quality within the wider borough. Clean Air Cheltenham’s plan is included in Appendix D: Response to Draft Comments. While the technical aspects of this AQAP have focussed on concentrations within the declared AQMA, the wider ambitions are included as part of the measures for reducing pollutant concentrations across the whole borough.

It is the aim for this steering group to continue to communicate at regular intervals following the adoption of the AQAP. This is essential to provide progress reports on

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individual actions in relation to the AQAP measures, discuss any key lessons learnt from the continual implementation of the measures and to continue to discuss any new ideas in terms of future measures and actions within the borough.

5 AQAP Measures

Table 5.1 shows the AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- estimated cost of implementing each action (overall cost and cost to the local authority)
- expected benefit in terms of pollutant emission and/or concentration reduction
- the timescale for implementation
- how progress will be monitored

NB: Please see future ASRs for regular annual updates on implementation of these measures.

In order to meet our legal obligations and key priority within our corporate plan, a regular review of our policies and plans will ensure we continually improve the service to tackle poor air quality generally and at any local hotspots. We address air quality management in other strategies such as our [Pathway to net Zero](#) to ensure we deliver services in an integrated manner. We have a duty to keep our AQAP up to date and any revision to it will be subject to a consultation process. The Environment Act 2021 strengthens the Local Air Quality Management framework by placing greater emphasis on Air Quality Action Plans (AQAPs) setting out how air quality standards and objectives are to be achieved.

Aspire to Reduce the Levels of NO₂ Below the National Target Objective

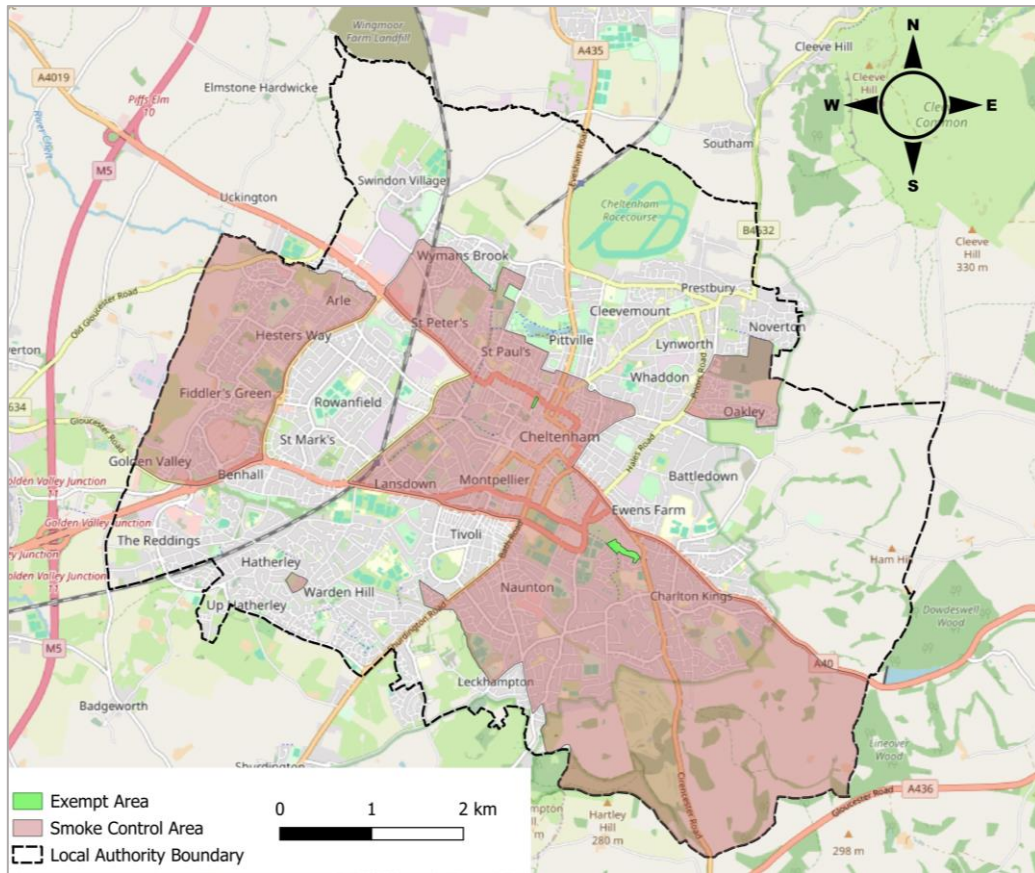
All combustion processes in air produce oxides of nitrogen (NO_x). Nitrogen dioxide (NO₂) and Nitric Oxide (NO) are referred to as NO_x. Emissions from road transport is the main source and is the main reason for the declaration of AQMA's. The law sets a minimum objective of 40 µg/m³ in a calendar year and a one hour level of 200µg/m³ not to be exceeded more than 18 times in a calendar year. As an Authority, we aspire to do more. We recognise that the World Health Organisation (WHO) global air quality guidelines recommend a much lower incremental target reduction to 10µg/m³. Reports

suggest that since 1970 the emissions of nitrogen oxides have reduced by 69% and fell by a further 19% between 2010 and 2015³. There is no safe level of NO₂ below which there are no adverse health effects and so any reduction below the set air quality standards will bring additional health benefits. The road to [net zero](#) sets out the approach to reduce exhaust emissions from road transport. This is extremely important given that the AQMA is declared due to increased NO₂ levels heavily influenced by transport emissions. Our current exceedance is limited to a very small area and our action plans must reflect this. As a key partner we continue to engage with Gloucestershire County Council on the [Local Transport Plan](#) which sets out the long term strategic transport vision for the county to 2041. This will require significant resources and commitments from Cheltenham Borough Council and its partners to deliver the identified actions.

Reviewing the Borough's Smoke Control Areas

Statistics show that domestic burning from wood burners and coal fires is the single largest contributor to the emission of particulate matter. Recent legislation will ensure the most polluting fuels are phased out. As a Local Authority under the Clean Air Acts, we can designate smoke control areas. This is an area where individuals and businesses must not emit a substantial amount of smoke and they must not buy or sell unauthorized fuel unless it is to be used in an appliance approved for use in a smoke control area. Currently approximately half of the Borough has been designated a smoke control area by way of over 20 separate orders. A map of the areas is shown in Figure 5.1

Figure 5.1 – Smoke Control Areas in Cheltenham



Deliver a Schools Air Quality Project

We will develop and deliver an educational awareness initiative within schools with strategic direction from The Director of Public Health. This will highlight the issues of local air pollution and measures that parents, carers, pupils and others can take to reduce their emissions. We have secured additional funding for an officer for a 2 year period to develop, drive, monitor and evaluate this project.

Implement education and awareness campaigns

We will work with the Director of Public Health and our One Gloucestershire Integrated Care system partners at a strategic level to support campaigns using a behavioural science approach. We will work with key target groups to understand what would enable them to change behaviour. We will aim to raise awareness of the health effects of exposure to poor air quality including the implications for Covid 19, lung disease and development, coronary heart disease, stroke, cancer, exacerbation of asthma and

increased mortality²². We will use thematic data more effectively to inform and prioritise our actions²³.

Adopt powers to enforce the ‘stationary idling offence’ for vehicles

Motorists who leave vehicle engines running while stationary cause unnecessary emissions of harmful pollutants. This affects health and contributes to climate change. As a Local Authority we will adopt legislation and give powers to Officers under the Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002. This would require motorists to switch off their engine when asked to do so by an authorised officer. A proportionate approach to enforcement will be employed to bring about positive behaviour change. Enforcement will be a last resort following appropriate education and information campaigns. Where motorists are uncooperative and fail to comply, they could be faced with a fixed penalty notice. Idling at school gates will be included within the school’s air quality project.

Ensure that the planning and design of the Golden Valley Development sets a standard for good air quality in an urban development

The Joint Core Strategy (JCS) adopted by Gloucester Tewkesbury and Cheltenham sets out the strategic framework for the area including the broad expectations for the Golden Valley Development. The adopted supplementary Planning Document (SPD) builds on the JCS to set a more focused vision, masterplan and set of objectives for the development. The masterplan will provide an extensive network of streets and tracks to encourage active and sustainable travel choices and green infrastructure. The master plan will deliver mobility hubs to facilitate modal shifts between public transport, bicycles and other forms of micro mobility. It will consider off site effects from traffic accessing and egressing the site to ensure air quality objectives are met.

Support Gloucestershire County Council’s delivery of an expanded Arle Court transport hub to further contribute to higher air quality standards in Cheltenham

²² [CMO report on air quality](#)

²³ [Air Quality Briefing for Directors of Public Health](#)

We support the planned improvements to the transport hub by Gloucester County Council to provide sustainable transport and high-quality alternatives to car use.

Encourage investment by all landowners and authorities in rapid charging points for electric vehicles

Monitoring and data modelling have shown that cars and large goods vehicles (LGV) are the main source of NOx pollution within Cheltenham. Full electric vehicles (EV) have zero exhaust emissions, however they still have non exhaust emissions including particulate matter through tyre and brake wear. This reinforces the importance of the measures supporting a modal shift away from private car use.

Reliable and easily accessible charge points within the Borough is the key to making the switch as easy as possible. We will be engaging with the County Council during the on street residential charge point scheme recognising the challenges faced by those living in flats, terraced properties and those without home charge points. GCC have appointed an EV charging operator to progress on street EV charging points across Cheltenham. Cheltenham Borough Council are undertaking a strategic car parking review looking at how car parks can better serve individuals as well as deliver wider economic, environmental and social outputs including improving air quality. We are engaging with EV operators on a range of suitable locations and investigating the most appropriate routes to delivery.

Adopt a policy for licensed taxis and private hire vehicles that immediately removes the most polluting vehicles and achieves a net zero emissions fleet by 2030

Taxis and private hire vehicles are an essential form of transport in Cheltenham, with licensed taxis and private hire vehicles, collectively, undertaking thousands of journeys around the borough annually. Our air quality management regime has identified that vehicle exhaust emissions are the principal source of pollution, with particulate matter (PMs) forming an increasingly important contributor to air pollution and poor air quality.

A revised emissions policy for licensed private hire vehicles and taxis was adopted in 2022 setting a clear path to achieving a carbon neutral licensed fleet by 2030. The policy seeks to take a staged approach whereby the most polluting vehicles are phased out as a matter of priority. The remaining licensed vehicles with better emission

standards will gradually be phased out, thereby meeting the 2030 carbon neutral commitment.

Support Gloucestershire County Council as the local highways authority to deliver modal shift away from private cars to public transport with, improvement in Cheltenham's walking and cycling routes.

We recognise and support the critical role of the County Council as Highway Authority and their role in traffic management and transport. This is fundamental in achieving air quality objectives and prevention measures are integrated with the [Local Transport Plan](#) There has been considerable progress over the last 2 years with the West Cheltenham route. We will support GCC and sign post businesses to the Think Travel team who can facilitate more sustainable work travel practices.

The shift to low and ultra-low vehicle emissions is well under way as we move to 2035 at which point the Government will end the sale of all new conventional petrol and diesel cars and vans. This shift will resolve the main cause of poor air quality, but it may not happen soon enough. A Clean air zone where targeted action is taken to improve air quality with a specific focus on NO₂ and particulate matter could be considered. Due to the potential impact on individuals and businesses this would be where no other options are viable and only if it can be demonstrated that it meets the expected outcomes as detailed in the [Clean Air Framework](#) Further monitoring and evidence gathering will be needed. Together with GCC we will also develop strategic routes, consider closure of certain town centre roads to certain vehicle-types, promote and upgrade cycling routes and infrastructure, consider adoption of a 'Twenty is Plenty' where possible, apply variable parking charges to incentivise use of EVs and hybrids, promote Workplace Travel Plans and promote a 'No Idling Policy' for buses and taxis. We would support GCC in a move to a mass rapid transit system which reduces the use of private cars in favour of public transport.

Support sectors containing more polluting vehicles to switch to cleaner vehicles

We will continue to build on our current progress of implementing alternative fuel sources within the Council and its partner organisations. The fleet replacement plan was recently adopted which included amongst other things a move away from petrol based mineral B7 diesel to electric and certified palm oil free hydrogenated vegetable oil (HVO) for the Ubico fleet and Council vehicles. This will have a direct effect on the

emissions of NO_x and PMs. We are also supporting Gloucestershire County Council with their 'last mile delivery' project aiming to reduce the amount of delivery vehicles entering the town centre.

Expand monitoring for PM₁₀ and PM_{2.5}

Particulate matter (PM) is a generic term to describe a complex mixture of solid and liquid particles of varying size, shape and composition. They are classes as coarse PM₁₀ (less than 10_{µm} in diameter), fine PM_{2.5} (less than 2.5_µ in diameter) and ultra-fine PM (less than 0.1_{µm} in diameter). It includes natural sources such as pollen and manmade sources such as dust from exhausts, brakes and tyres. Particles less than 10_{µm} pose the greater risk as they can be deposited deep within the lungs. PM's can travel large distances thus originating from non-UK sources. The UK has made binding commitments to further reduce emissions. The limitations of compliance assessment based solely on monitoring are well known. High quality monitors are costly to maintain and no matter how many sites are instrumented, it is inevitable that the vast majority of the population will still live in locations where air quality is not directly measured. This creates the long-standing requirement for monitoring to be made representative of regions and the population as whole. Monitoring for PM is complex. We have recently installed a DEFRA approved 1020 Beta attenuation mass monitor to monitor PM₁₀ and PM_{2.5}. It is also used to calibrate our 9 mesh pods which monitor PMs thus giving accurate reliable results on which to report and inform decision making. More detailed information can be found in our Annual Status Report Annual Status Report. We continue to work with DEFRA and will respond to new guidance on the new national approach to PM_{2.5} monitoring and its integration into the local air quality management framework. We continue to work closely with our data consultants to ensure accurate and meaningful results are published in light of the above.

Maintain and review air quality monitoring locations around the borough.

CBC air monitoring regime currently consists of 46 NO_x diffusion tubes (passive monitoring) including the triplicate co located station. We have 9 mesh pods, 1 automated continuous monitor and 2 DEFRA approved beta attenuation mass monitors, one monitoring PM₁₀ and the other monitoring PM_{2.5}. The mesh pods monitor real time localised NO_x, PM₁₀ and PM_{2.5}. Although they are not accredited devices, such data is a useful indicator as to pollutant concentrations within the Borough. The continuous monitor is MCERTS approved mirroring compliance with EN 14211:2012

and measures NO_x NO₂ and NO. All the above require ongoing maintenance, calibration, data analysis and rental costs. CBC reviews its monitoring regime each year, responding to the data and to any legislative changes and requirements from DEFRA. Our monitoring provides an extensive picture to assist with planning requirements. Monitoring locations are determined by modelling reports. A full list of monitoring and locations can be found on our interactive website [monitoring sites](#) and within our [Annual Status Report](#). Monitoring of NO₂ within the AQMA and across the district will continue and results from our PM monitoring will be included within our next status report to DEFRA.

Adopt an air quality supplementary planning document

Our Joint Core Strategy (JCS) and our Cheltenham plan recognise the importance of the protection and enhancement of our natural environment. Cheltenham Borough Council expects all developers to manage the air quality impact of all proposed developments and an air quality supplementary planning document will support these existing plans. It will give clear requirements to developers to assess the effects of air quality on the proposed development. It will detail the type and scale of developments which will require an air quality impact assessment and what the assessment must include. It will ensure transparent and consistent advice for developers where air quality needs to be addressed.

Produce a biodiversity supplementary planning document

Our Joint Core Strategy (JCS) and our Cheltenham plan recognise the importance of the protection and enhancement of our natural environment. Cheltenham Borough Council expects all developers to manage the environmental impact of all proposed developments. A biodiversity supplementary planning document will support these existing plans by providing guidance to developers on what they must do to protect and enhance our natural environment throughout the full development cycle. We will reflect the role that trees, vegetation, nature corridors and ecosystems play in removing air pollution and improving air quality. It will detail the type and scale of development which will require an environmental impact assessment (EIA) and what the environmental impact assessment must include. It will ensure transparent and consistent advice where effects on the environment need to be addressed.

We will manage and maintain our trees as public assets using the CAVAT method.

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
1	Engage with Royal Mail to move toward low emissions fleet	Promoting Low Emission Transport	Company Vehicle Procurement -Prioritising uptake of low emission vehicles	2024	2028	CBC / GCC / Royal Mail	Royal Mail	No	Unknown	£10k - £50k	Planning	>5 µg/m ³	Reduced NO ₂ within AQMA at monitoring site closest to Royal mail Delivery Office	Initial meeting has taken place, further engagement is planned.	
2	Publish AQ monitoring results using low-cost AQMesh sensors on accessible website	Public Information	Via the Internet	ongoing	ongoing	CBC	CBC	No	Unknown	£10k - £50k	Ongoing	<0.5µg/m ³	Continued upload of data onto monitoring site	n/a	Already available
3	Expand the existing Arle Court Park and Ride (https://www.gloucestershire.gov.uk/transport/park-ride-gloucester-and-cheltenham/changes-to-arle-court-park-ride/)	Alternatives to private vehicle use	Bus based Park & Ride	2022	2030	CBC	CBC	No	Unknown	£50k - £100k	Implementation	1-2 µg/m ³	Completion of Campaigns	n/a	The Park and Ride at Arle Court has been redesigned improved. Possible scope for better public awareness of facility.
4	Public Health Awareness Campaigns as part of 'Air Quality Communication Strategy' around exceedances in AQMA	Public Information	Other	2023	2028	CBC / GCC	CBC	No	Unknown	< £10k	Planning	<0.5µg/m ³	Suite of campaigns to promote active travel and uptake in Electric Vehicles specifically within AQMA.	n/a	
5	Investigate Setting an annual mean target objective of 30 µg/m ³ NO ₂ instead of the National objective of 40 µg/m ³ .	Policy Guidance and Development Control	Other policy	2023	2028	CBC	CBC	No	Unknown	£50k - £100k	Planning	>5 µg/m ³	To be supplemented by the Low Emissions Strategy (see measure 14). Initial KPI will be to reduce levels within the AQMA below 40ug/m3.	n/a	
6	Investigate setting targets for PM ₁₀ and PM _{2.5} in line with WHO guidance, and emerging DEFRA requirements	Policy Guidance and Development Control	Other policy	2023	2028	CBC	CBC	No	Unknown	£50k - £100k	Planning	>5 µg/m ³	To be supplemented by the Low Emissions Strategy (see measure 14). Initial KPI will be to reduce levels within the AQMA below 40ug/m3.	n/a	

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
7	Phase out around 500 Euro V and older Taxis and replace with Euro VI vehicles.	Promoting Low Emission Transport	Taxi Licensing conditions	2022	2026	CBC	CBC	No	Unknown	£10k - £50k	Planning	<0.5µg/m³	Completion of Campaigns	n/a	Gradual uptake as there has been recent requirement for taxis to be updated for accessibility
8	Develop partnership for last mile delivery in town centre, by sustainable transport.	Transport Planning and Infrastructure	Freight Partnerships for city centre deliveries	2023	2028	CBC	CBC	No	Unknown	£10k - £50k	Planning	<0.5µg/m³	Development of consolidated delivery services	n/a	Already under consideration with GCC / A commercial partner. Combine with Carbon Neutral Plan
9	Offer more EV charging points in the streets surrounding the AQMA	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	2028	CBC / GCC	GCC/CBC	No	Unknown	£10k - £50k	Implementation	<0.5µg/m³	Additional EV charging points installed at West End Car Park adjacent to the AQMA and surrounding streets.	n/a	Streets – GCC Car Parks -CBC
10	Extend the existing priority parking areas for Electric Vehicles within parking areas of AQMA	Promoting Low Emission Transport	Priority parking for LEV's	2024	2028	CBC	CBC	No	Unknown	£10k - £50k	Implementation	<0.5µg/m³	Review and update discounts for residents parking permits for Electric Vehicles in and around the AQMA	n/a	The Borough and County Councils continue to encourage electric vehicle use through the installation of charging points in car parks or on-street. The Borough currently provide free EV charging at its car park charging points.
11	Adopt a Cheltenham Air Quality Strategy. Consider inclusion of measures from Clean Air Cheltenham's document and other community sources.	Policy Guidance and Development Control	Low Emissions Strategy	2024	2026	CBC with Local Councillors and Residents Action Group - Clean Air Cheltenham	CBC	No	Unknown	£10k - £50k	Planning	<0.5µg/m³	ASR process		
12	Review the Borough's Smoke Control Areas	Other	Other	2024	2025	CBC/Defra	CBC	0	Unknown	£10k - £50k	Planning	<0.5µg/m³	Amendments to SCAs		
13	Expand Monitoring for PM10 and PM2.5	Public Information	Via the Internet	2024	2025	CBC	CBC	No	Unknown	£50k - £100k	Implementation	<0.5µg/m³	Additional PM Monitoring Locations		
14	Produce a biodiversity supplementary planning document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2024	2026	CBC	CBC	No	Unknown	£50k - £100k	Implementation	<0.5µg/m³	Production of Biodiversity Plan		

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
15	Emissions Policy for Private Hire Vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	ongoing	2025	CBC	CBC	No	Unknown	£50k - £100k	Planning	<0.5µg/m³	Implementation of new policy	n/a	CBC are in the process of developing the policy to implement the Cabinet Member Customer & Regulatory Services' ambition to move the taxi fleet to EVs by 2026/7. This policy will need to address the gradual phasing out of petrol and diesel vehicles, starting with the few Euro 4s and then eventually Euro 5 and 6 to EV over this period. Vehicle replacements will need to be Euro 6 as a minimum before converting to EV.
16	Apply variable parking charges to incentivise use of EVs and Hybrids	Public Information	Other	2024	2029	CBC / GCC Partnership	GCC/CBC	No	Unknown	£10k - £50k	Planning	<0.5µg/m³	Variable Parking Charges applied		Cheltenham and Gloucestershire County councils will also investigate the potential for differential parking charges for electric and hybrid vehicles on street and in car parks.
17	Implement Junction improvements/traffic light changes in vicinity of AQMA	Transport Planning and Infrastructure	UTC, Congestion management, traffic reduction	2024	2028	GCC	CBC	No	Unknown	£100k - £500k	Planning	0.5-1 µg/m³	Study into feasibility		
18	Engage with local NHS Trust to raise awareness of the effects of exposure to poor air quality where limits are exceeded.	Public Information	Other	2023	2028	CBC / Local NHS Trust	CBC	No	Unknown	< £10k	Planning	<0.5µg/m³	Target most vulnerable groups including elderly, children and disabled people, using NHS facility io border of AQMA	n/a	
19	Improve data around AQMA (and beyond): A) Commission a study to understand purpose of car	Transport Planning and Infrastructure	UTC, Congestion management	2024	2024	CBC	CBC	No	Unknown	£50k - £100k	Planning	<0.5µg/m³	Consideration of road closures	n/a	Work with GCC Highways department. Engage

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
	trips (including start/end points) through AQMA B) Single person or multiple occupancy survey C) How car parking generates trips through the AQMA		, traffic reduction												consultants if required.
20	Develop strategic routes; consider, closure of certain town-centre roads to certain vehicle-types	Transport Planning and Infrastructure	Other	2023	2025	GCC	CBC	No	Unknown	£1m - £10m	Planning	>5 µg/m³	Review process	n/a	Needs support of GCC and (possibly) national legislation. Difficult to enforce, and unpopular with a vocal minority.
21	Install Charging points at taxi ranks	Promoting Low Emission Transport	Taxi emission incentives	2022	2026	CBC	CBC	No	Unknown	£50k - £100k	Planning	<0.5µg/m³	Change in Speed Limits	GCC published its Road Safety Policy 2022-2023 in Nov 2022. This included a 20mph Speed Restriction Policy Statement. GCC Support "20 is plenty" campaigns where communities meet 5 specific criteria including locations which are adjacent to or within Local Cycling and Walking Infrastructure Plan networks or form part of other dedicated initiatives to improve the urban realm and the liveability of streets. Some of the initiatives within the policy will have a direct beneficial effect on air quality.	Licensing Team Leader update: In drafting this AQAP, it was highlighted that a very small number of taxis are currently electric or hybrid, the emphasis in recent years has been on making the taxis accessible to users with disabilities and so resources may be limited to update parts of the fleet immediately. Possible liaison with GCC planning more EVs at Taxi Ranks, CBC to be responsible for EVs in Car Parks. Planning to seek funding on the basis that we want taxi rank infrastructure in place by 2026/7.
22	Deliver a Schools AQ Project- Education and Awareness campaign	Policy Guidance and Development Control	Other policy	2023	2028	CBC / GCC	CBC	No	Unknown	£100k - £500k	Planning	<0.5µg/m³	Schools / students engaged and making positive changes to travel options.		Needs support of GCC.
23	'Twenty is Plenty'	Transport Planning and Infrastructure	Reduction of speed limits, 20mph zones	2020	Ongoing	CBC	CBC	No	Unknown	£100k - £500k	Planning	<0.5µg/m³	Report for cabinet by early Dec 2023. There is no additional resource for implementation . Action around schools		The Cabinet working group are awaiting better guidance on the benefits and implementation. Assessed in the "Connecting Cheltenham" report

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
													will be linked to AQ Education project		(2020). The report was also issued to GCC to help inform their LTP as: "Introduce speed limits in accordance with the current national guidelines and prioritise them based on available evidence, including 20mph zones."
24	Promote a No Idling Policy	Traffic Management	Anti-idling enforcement	2018 and ongoing	Unkown	GCC	CBC	No	Unknown	£10k - £50k	Planning	<0.5µg/m³	Metrics on Car Sharing Online Platforms		No powers to prevent or penalise idling at roadside. The current fleet of Stagecoach buses now have a black box system which monitors driving behaviour and promotes more fuel efficient driving and anti-idling. Other operators may not use this technology.
25	Increase Car Sharing in AQMA.	Alternatives to private vehicle use	Car & lift sharing schemes	2016	2028	GCC	GCC/CBC	No	Unknown	< £10k	Implementation	<0.5µg/m³	Website metrics	Existing website available. Work to increase visibility and awareness	Parish Lift, Carshare Gloucestershire[1] available via GCC.
26	Investigate delivery consolidation opportunities including Golden Valley Development to reduce deliveries through AQMA.	Transport Planning and Infrastructure	UTC, Congestion management, traffic reduction	2023	ongoing	CBC	CBC	No	Unknown	£10k - £50k	Planning	0.5-1 µg/m³	ASR process		Work with CBC Climate Team, Golden Valley Development team. Engage consultants if required
27	Promote Workplace Travel Plans	Promoting Travel Alternatives	Car & lift sharing schemes	Unknown	Unkown	GCC	CBC	No	Unknown	£10k - £50k	Planning	0.5-1 µg/m³	No. Workplaces with Travel Plans		Cheltenham Borough Council will introduce a Cycle to Work Scheme and are developing pool car and car sharing projects. These will be used to encourage businesses in Cheltenham to develop and implement similar plans. GCC can provide this service to employers.

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
28	Promote Cycling and upgrade of Infrastructure in line with Severn Vale Cycling and Walking Infrastructure Plan	Promoting Low Emission Transport	Promotion of cycling	2020	Ongoing	GCC	CBC	No	Unknown	£100k - £500k	Implementation	<0.5µg/m³	In line with Cycling and Walking Infrastructure Plan. https://www.gloUCEstershire.gov.uk/media/2095888/cycling-and-walking-infrastructure-plan-final-20200828.pdf		Elements of this measure are being brought forward under the West of Cheltenham improvement Scheme as well as a bid for A417 designated funds. There is also a small bid for town centre signage with the Capital Programme at present.
29	Install Rapid Charging Points for Electric Vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Ongoing	2028	GCC	CBC	No	Unknown	£50k - £100k	Implementation	<0.5µg/m³	No. of charging points installed		Fast Electric charging points are installed at 3 sites. Rapid chargers are installed at Cheltenham Railway Station. Chargers installed at Tesco and Lidl superstores. Promenade charging has not been installed to date. Look to install within parking areas of AQMA. If possible seek to install within Royal Mail site.
30	Implement alternative fuel sources for business fleet within the council	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	2022	2023	CBC	CBC	No	Unknown	£500k - £1m	Planning	<0.5µg/m³	Increase in Euro VI and Electric Vehicles as part of local authority controlled vehicle fleet		Extend to Ubico / other ALMO and suppliers / contractors. Extend to non-fleet users. GCC Already investigating HVO Biofuel, possibility for joint project?
31	Create Car-free Zones/Emissions Charging Zones	Promoting Low Emission Transport	Low Emission Zone (LEZ) or Clean Air Zone (CAZ)	2022	2030	CBC	CBC	No	Unknown	£1m - £10m	Planning	>5 µg/m³	Further investigative work to be done to determine how achievable this measure is and whether it is proportionate to the exceedances within the AQMA		Needs support of GCC. Detailed plan needed before implementation, as no natural diversion routes around town centre, so closures / charging zones could lead to pollution elsewhere. Needs to be a component in a wider scheme.

5.1 Timescales of the AQAP Measures

The measures set out give indicative timescales for each measure to be completed. Progress will be monitored through ASR reporting.

5.2 Air Quality Partners

5.2.1 Royal Mail

There is a specific goal of working with Royal Mail to get newer vehicles using their depot which is partly located within the AQMA. Initial discussions have taken place and progress will be reported through the ASR process.

5.2.2 Gloucestershire County Council

Gloucestershire County Council (GCC) are responsible for adopted highways and major schemes which could have an impact on pollutant concentrations. CBC will continue to work closely with GCC to understand where there are interdependencies.

5.3 Measures to Maintain Safe Air Quality

Measures are set out in the plan to increase awareness of Air Quality and uptake of electric vehicles. While these measures are at early inception stages now, they are predicted to result in behaviour and technological changes which will maintain Air Quality Objectives in years to come.

6 Quantification of Measures

6.1 Assumptions

Many of the measures set out in Table 5.1 are very difficult to quantify. No detailed studies have been completed for any measure to reliably inform the likely effect in terms of change in traffic or fleet composition as a result of the measures. Some measures do allow for a high-level analysis of reductions in emissions. A summary consideration of the measures and to the extent which they can be quantified is contained in Table 6.1 below.

Table 6.1 – Measure Quantification Discussion

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
1	Engage with Royal Mail to move toward low emissions fleet	Based on a change of Royal Mail's current fleet of 81 vehicles in this area total of LGV 162 vehicle trips, this could result in a reduction of 6.4µg/m ³ NO _x . See details below	Y	>5 µg/m ³
2	Expand the existing Arle Court Park and Ride (https://www.gloucestershire.gov.uk/transport/park-ride-gloucester-and-cheltenham/changes-to-arle-court-park-ride/)	The changes will see the number of parking spaces at the site increase from 576 to 980 and buses will be able to enter and exit the site directly from the westbound A40 carriageway. See details below.	Y	1-2 µg/m ³
3	Phase out around 500 Euro V and older Taxis and replace with Euro VI vehicles.	Predicted 0.18µg/m ³ reduction in concentration from these 500 vehicles from Euro V to Euro VI using latest Emissions Factors Toolkit, see below for further information.	Y	<0.5µg/m ³
4	Publish AQ monitoring results using low-cost AQMesh sensors on accessible website	While this measure will increase awareness and prioritization of air quality as an issue, it is unlikely to result in any direct reductions in concentrations	N	<0.5µg/m ³

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
5	Public Health Awareness Campaigns as part of 'Air Quality Communication Strategy' around exceedances in AQMA	Measure is more an awareness raising tool; however it is also a useful measure to help members of public understand the importance of mitigation for air quality	N	<0.5µg/m ³
6	Investigate Setting an annual mean target objective of 30µg/m ³ NO ₂ instead of the National objective of 40µg/m ³	While ambitious and potentially leading to reductions well below the national objective, further studies and detail will be produced to understand how this would interact with other policies, e.g. planning.	N	>5 µg/m ³
7	Investigate setting targets for PM ₁₀ and PM _{2.5} in line with WHO guidance, and emerging DEFRA requirements	While ambitious and potentially leading to reductions well below the National objective, further studies and detail will be produced to understand how this would interact with other policies, e.g. planning. Additional discussion is provided below.	N	>5 µg/m ³
8	Develop partnership for last mile delivery in town centre, by sustainable transport.	Encourages enhanced uptake of Electric Vehicles. Expected 0.006% reduction in road emissions of NOx per EV rather than combustion engine vehicle using latest Emissions Factors Toolkit.	N	<0.5µg/m ³
9	Offer more EV charging points in the streets surrounding the AQMA	Encourages enhanced uptake of Electric Vehicles. Expected 0.006% reduction in road emissions of NOx per EV rather than combustion engine vehicle using latest Emissions Factors Toolkit.	N	<0.5µg/m ³

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
10	Extend the existing priority parking areas for Electric Vehicles within parking areas of AQMA	Encourages enhanced uptake of Electric Vehicles. Expected 0.006% reduction in road emissions of NOx per EV rather than combustion engine vehicle using latest Emissions Factors Toolkit.	N	<0.5µg/m ³
11	Adopt a Cheltenham Air Quality Strategy. Consider inclusion of measures from Clean Air Cheltenham's document and other community sources.	Not possible to quantify any measure from this document at this stage	N	<0.5µg/m ³
12	Review the Borough's Smoke Control Areas	Not directly related to reduction in NO ₂ concentrations	N	<0.5µg/m ³
13	Expand Monitoring for PM ₁₀ and PM _{2.5}	While this measure will increase awareness and prioritization of air quality as an issue, it is unlikely to result in any direct reductions in concentrations	N	<0.5µg/m ³
14	Produce a biodiversity supplementary planning document	Not directly air quality related but will help to manage concentrations holistically with an overall view on environmental protection	N	<0.5µg/m ³

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
15	Emissions Policy for Private Hire Vehicles	There is considered insufficient detail at the stage of development of this measure to quantify the potential change in concentrations. The stated reduction is based on professional judgement.	N	<0.5µg/m³
16	Apply variable parking charges to incentivise use of EVs and Hybrids	While this measure will likely result in an increase of EVs and Hybrid vehicles it is difficult to quantify in isolation.	N	<0.5µg/m³
17	Implement Junction improvements/traffic light changes in vicinity of AQMA	Possible to quantify emissions once findings of study available. Insufficient detail available to quantify at this stage. Change in Concentrations is based on professional judgement	N	0.5-1 µg/m³
18	Engage with local NHS Trust to raise awareness of the effects of exposure to poor air quality where limits are exceeded.	Measure is more an awareness raising tool; however it is also a useful measure to help members of public understand the importance of mitigation for air quality	N	<0.5µg/m³
19	Improve data around AQMA (and beyond): A) Commission a study to understand purpose of car trips (including start/end points) through AQMA B) Single person or multiple occupancy survey C) How car parking generates trips through the AQMA	Possible to quantify emissions once findings of study available. Measure itself will not result in reduction of emissions	N	<0.5µg/m³

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
20	Develop strategic routes; consider, closure of certain town-centre roads to certain vehicle-types	Unknown at this stage until measure is further developed between CBC and GCC. Potential for high reduction in pollutant concentrations	N	>5 µg/m ³
21	Install Charging points at taxi ranks	Encourages enhanced uptake of Electric Vehicles. Expected 0.006% reduction in road emissions of NOx per EV rather than combustion engine vehicle using latest Emissions Factors Toolkit.	N	<0.5µg/m ³
22	Deliver a Schools AQ Project- Education and Awareness campaign	Measure is more an awareness raising tool; however it is also a useful measure to help members of public understand the importance of mitigation for air quality	Y	<0.5µg/m ³
23	'Twenty is Plenty'	While modelling through the Emissions Factors Toolkit suggest this could result in an increase in emissions. Other local authorities have introduced 20mph zones and other traffic-calming measures to improve safety and traffic flow. There has been a significant amount of research into the air quality impacts of such schemes, but the conclusions vary depending on the location of the schemes and the types of restraint measures put in place.	N	<0.5µg/m ³

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
24	Promote a No Idling Policy	Measure is an awareness raising tool. However, it is also a useful measure to prevent vehicles idling and causing congestion in specific locations, which is a significant cause of emissions.	N	<0.5µg/m ³
25	Increase Car Sharing in AQMA.	Information below	N	<0.5µg/m ³
26	Investigate delivery consolidation opportunities including Golden Valley Development to reduce deliveries through AQMA.	Possible to quantify emissions once findings of study available. Change in Concentrations is based on professional judgement of indicative reduction	N	0.5-1 µg/m ³
27	Promote Workplace Travel Plans	There is considered insufficient detail at the stage of development of this measure to quantify the potential change in concentrations. The stated reduction is based on professional judgement.	N	0.5-1 µg/m ³
28	Promote Cycling and upgrade of Infrastructure in line with Severn Vale Cycling and Walking Infrastructure Plan	Difficult to quantify uptake. Change based on professional judgement	N	<0.5µg/m ³
29	Install Rapid Charging Points for Electric Vehicles	Encourages enhanced uptake of Electric Vehicles. Expected 0.006% reduction in road emissions of NOx per EV rather than combustion engine vehicle using latest Emissions Factors Toolkit.	N	<0.5µg/m ³

Measure No.	Measure	Discussion on Quantification	Quantifiable?	Reduction in AQMA
30	Implement alternative fuel sources for business fleet within the council	Unlikely to have a significant effect in isolation as Council-operated business vehicles only make up a small part of the total fleet however it is important to lead by example and this measure will encourage progress from non-Council sources	N	<0.5µg/m ³
31	Create Car-free Zones/Emissions Charging Zones	Potentially very high but very speculative at this stage as likely to clash with policies to encourage use of the High Street. Context for potential reduction calculations are provided below. Given its difficulty to implement, detailed modelling has not been completed	N	>5 µg/m ³

6.1.1 Measure Quantification – Engage with Royal Mail to move toward low emissions Fleet

It has been assumed, based on the number of spaces at the Royal Mail depot on Swindon Road, that there is capacity for 81 LGVs to use this location. While there may be more frequent trips to and from the depot, it has been assumed that each of these spaces is used for travel in and out once per day, resulting in 162 LGV movements from the depot.

The EFT has been used to calculate the change of 162 LGVs becoming Euro VI rather than the default fleet (which is made up of older vehicles). Comparatively, when all LGVs are Euro VI, there is a 54% decrease in emissions compared to the standard fleet.

Detailed dispersion modelling was not completed, but a simple method using the NO_x to NO₂ calculator was used to assess the change in emissions and its potential effect on concentrations. While emissions do not equal concentrations, this does give an indication of what change there may be at the highest receptor as a result of this measure.

The LGV source apportionment of NO₂ concentrations within the AQMA as identified in Table 3.3 is 11.8µg/m³. Assuming this reduction occurs in line with the EFT calculation, this would result in a reduction in the AQMA of **6.4µg/m³**.

6.1.2 Measure Quantification – Expand the Existing Arle Court Park and Ride

The changes will see the number of parking spaces at the site increase from 576 to 980 and buses will be able to enter and exit the site directly from the westbound A40 carriageway.

Assuming every parking space is used and thus displaces vehicle trips within the AQMA this would result in a reduction of 664 two-way trips within the AQMA. This does not account for any increases in bus movements.

As with the above measure, detailed dispersion modelling was not completed, but a simple method using the NO_x to NO₂ calculator was used to assess the change in emissions and its potential effect on concentrations. While emissions do not equal concentrations, this does give an indication of what change there may be at the highest

receptor as a result of this measure. The table below shows the calculations undertaken and potential reductions.

Table 6.2 – Indicative Estimated Reduction in Emissions as a result of Arle Court Park and Ride Expansion

Max Road NO _x at a Receptor (µg/m ³)	91.3
Vehicle NO _x Emissions on Poole Way (g/km/s)	0.06023
Emissions reduction from 664 fewer LDVs (g/km/s)	0.00231
Emissions reduction as a percentage (%)	0.04
Reduction in NO _x Emissions (µg/m ³)	3.51
Reduced Total Road NO _x (µg/m ³)	87.99
Background NO _x (µg/m ³)	21.1
Total NO ₂ concentration at worst case receptor without measure (µg/m ³)	56.7
Total NO ₂ concentration at worst case receptor with measure (µg/m ³)	55.42
Reduction in concentrations (µg/m ³)	1.28

6.1.3 Measure Quantification – Phase out around 500 Euro V and older Taxis and replace with Euro VI vehicles.

Using the Emissions Factors Toolkit user Euro Input option, emissions from Euro V vehicle and Euro VI vehicles can be easily quantified to account for the change in 500 Euro V taxis becoming 500 Euro VI taxis.

As with the above measure, detailed dispersion modelling was not completed, but a simple method using the NO_x to NO₂ calculator was used to assess the change in emissions and its potential effect on concentrations. While emissions do not equal concentrations, this does give an indication of what change there may be at the highest receptor as a result of this measure. The table below shows the calculations undertaken and potential reductions.

Table 6.3 – Indicative Estimated Reduction in Emissions as a result of Measure for Additional Euro VI Taxis

Max Road NO _x (µg/m ³)	91.294318
AADT total on Poole Way	14008
% of vehicles which could move from Euro V to Euro VI (i.e. 500 as a % of vehicles on Poole Way)	4%
Emissions from 500 Euro V taxis (g/km/s) (split 50/50 cars and black cabs)	0.0015
Emissions from 500 Euro VI taxis (g/km/s) (split 50/50 cars and black cabs)	0.0012
Reduction in Euro VI taxis compared to Euro V (%)	15
15% of 4% (i.e. the potential reduction in emissions on Poole Way from the 500 vehicles which would change) (%)	0.53%
Change in concentrations (µg/m ³)	0.48
Total Road NO _x with Measure in Place (µg/m ³)	90.81
Background NO _x (µg/m ³)	21.1
Total NO ₂ concentration at worst case receptor without measure (µg/m ³)	56.68
Total NO ₂ concentration at worst case receptor with measure (µg/m ³)	56.5
Reduction in concentrations (µg/m ³)	0.18

6.2 Cost Benefit Analysis of Measures

6.2.1 Methodology

Using the above assumptions around the quantitative pollution reduction and assumed costs, each measure was given a score as set out below.

Table 6.4 – Cost Score

Estimated Cost of Measure	Score
< £10k	1
£10k - £50k	2
£50k - £100k	3
£100k - £500k	4
£500k - £1m	5
£1m - £10m	6
> £10m	7

Table 6.5 – Benefit Score

Estimated Reduction in Pollutant Concentrations	Score
>0.5µg/m ³	1
0.5-1 µg/m ³	2
1-2 µg/m ³	3
2-3 µg/m ³	4
3-4 µg/m ³	5
4-5 µg/m ³	6
>5 µg/m ³	7

Using the scores above, the below matrix was implemented to work out the cost-benefit. Higher scores are awarded for those measures which are cheapest with the greatest effect, with the lowest scores awarded for those which will be costly with limited reduction in pollution.

Table 6.6 – Cost Benefit Scoring Matrix

		Estimated Reduction in Pollutant Concentrations						
		<0.5 µg/m ³	0.5-1 µg/m ³	1-2 µg/m ³	2-3 µg/m ³	3-4 µg/m ³	4-5 µg/m ³	>5 µg/m ³
Cost of Measure	< £10k	6	8	10	12	14	16	18
	£10k - £50k	5	6	8	10	12	14	16
	£50k - £100k	4	5	6	8	10	12	14
	£100k - £500k	3	4	5	6	8	10	12
	£500k - £1m	2	3	4	5	6	8	10
	£1m - £10m	1	2	3	4	5	6	8
	>£10m	0	1	2	3	4	5	6

The analysis should also account for the feasibility of implementing the measures, with those likely to progress given a higher priority than those which are acknowledged to be a challenge to implement. The feasibility score factors in local influences such as political backing, accessibility to funding options and resources available. As such, each measure was assigned a 'Feasibility score based on the table below. The score from the matrix was multiplied by this score.

Table 6.7 – Feasibility Scores

Feasibility Score	Score
Measure has already been started and just requires progressing	7
Very easy to implement, and political good will towards this, sufficient resources	6
Easy to implement, general political goodwill and available resources	5
Possible to implement but may require some learning/campaigning, moderately time intensive	4
Possible to implement but not straightforward and will require some learning/campaigning, moderately time intensive	3
Challenging to implement, would require some campaigning, time intensive	2
Very difficult to implement, no political appetite, time and resource intensive	1

6.2.2 Cost-Benefit Analysis

Following the above assessment, it has been possible to rank the measures by cost, benefit and feasibility, this is shown in Table 6.8 below. With the feasibility weighting meaning that measures which are the easiest to progress are scored higher, these are prioritised.

The scoring is calculated by calculating the matrix score in Table 6.6 and multiplying it by the feasibility score in Table 6.7. For example, if a measure was predicted to result in a $1.5\mu\text{g}/\text{m}^3$ reduction and would cost £15,000, it would get a matrix score of '8'. If the measure was considered to be quite difficult to implement it would get a feasibility score of '2'. '8 x 2' would give a total cost-benefit score of '16' for this measure. This final score is arbitrary and is only to be used in comparison to other measures using this same scoring system.

Using this method of multiplying the matrix score with the feasibility score gives greater weight to the feasibility of measures. This will allow the Council to identify where there are easy wins which can prioritise measures with the least resistance.

Table 6.8 – Cost Benefit Analysis of Measures

Prioritised Measure	Measure	Cost	Cost Score	Air Quality Effect Score	Matrix Score	Feasibility Score	Overall Score
1	Engage with Royal Mail to move toward low emissions fleet	£10k - £50k	6	7	16	5	80
2	Publish AQ monitoring results using low-cost AQMesh sensors on accessible website	£10k - £50k	6	1	5	7	35
3	Expand the existing Arle Court Park and Ride (https://www.gloucestershire.gov.uk/transport/park-ride-gloucester-and-cheltenham/changes-to-arle-court-park-ride/)	£50k - £100k	5	3	6	5	30
4	Public Health Awareness Campaigns as part of 'Air Quality Communication Strategy' around exceedances in AQMA	< £10k	6	1	6	5	30
5	Investigate Setting an annual mean target objective of 30ug/m3 NO2 instead of the National objective of 40ug/m3.	£50k - £100k	5	7	14	2	28
6	Investigate setting targets for PM10 and PM2.5 in line with WHO guidance, and emerging DEFRA requirements	£50k - £100k	5	7	14	2	28
7	Phase out around 500 Euro V and older Taxis and replace with Euro VI vehicles.	£10k - £50k	6	1	5	5	25
8	Develop partnership for last mile delivery in town centre, by sustainable transport.	£10k - £50k	6	1	5	5	25
9	Offer more EV charging points in the streets surrounding the AQMA	£10k - £50k	6	1	5	5	25
10	Extend the existing priority parking areas for Electric Vehicles within parking areas of AQMA	£10k - £50k	6	1	5	5	25
11	Adopt a Cheltenham Air Quality Strategy. Consider inclusion of measures from Clean Air Cheltenham's document and other community sources.	£10k - £50k	6	1	5	5	25
12	Review the Borough's Smoke Control Areas	£10k - £50k	6	1	5	5	25
13	Expand Monitoring for PM10 and PM2.5	£50k - £100k	5	1	4	6	24
14	Produce a biodiversity supplementary planning document	£50k - £100k	5	1	4	6	24
15	Emissions Policy for Private Hire Vehicles	£50k - £100k	5	1	4	6	24
16	Apply variable parking charges to incentivise use of EVs and Hybrids	£10k - £50k	6	1	5	4	20

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Prioritised Measure	Measure	Cost	Cost Score	Air Quality Effect Score	Matrix Score	Feasibility Score	Overall Score
17	Implement Junction improvements/traffic light changes in vicinity of AQMA	£100k - £500k	4	2	4	5	20
18	Engage with local NHS Trust to raise awareness of the effects of exposure to poor air quality where limits are exceeded.	< £10k	7	1	6	3	18
19	Improve data around AQMA (and beyond): A) Commission a study to understand purpose of car trips (including start/end points) through AQMA B) Single person or multiple occupancy survey C) How car parking generates trips through the AQMA	£50k - £100k	5	1	4	4	16
20	Develop strategic routes; consider, closure of certain town-centre roads to certain vehicle-types	£1m - £10m	2	7	8	2	16
21	Install Charging points at taxi ranks	£50k - £100k	5	1	4	4	16
22	Deliver a Schools AQ Project- Education and Awareness campaign	£100k - £500k	4	1	3	5	15
23	'Twenty is Plenty'	£100k - £500k	4	1	3	5	15
24	Promote a No Idling Policy	£10k - £50k	6	1	5	3	15
25	Increase Car Sharing in AQMA.	< £10k	7	1	6	2	12
26	Investigate delivery consolidation opportunities including Golden Valley Development to reduce deliveries through AQMA.	£10k - £50k	6	2	6	2	12
27	Promote Workplace Travel Plans	£10k - £50k	6	2	6	2	12
28	Promote Cycling and upgrade of Infrastructure in line with Severn Vale Cycling and Walking Infrastructure Plan	£100k - £500k	4	1	3	4	12
29	Install Rapid Charging Points for Electric Vehicles	£50k - £100k	5	1	4	2	8
30	Implement alternative fuel sources for business fleet within the council	£500k - £1m	3	1	2	4	8
31	Create Car-free Zones/Emissions Charging Zones	£1m - £10m	2	7	8	1	8

Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Consultee		Feedback	Response
Defra		Set out and responded to in Appendix D: Response to Draft Comments	
1	Member of Public	Air quality is not good in Cheltenham Traffic is bad across the town	Monitoring has highlighted 1 hotspot where NO ₂ is exceeded and the air quality action plan to improve air quality specifically targets this area. We recognize the emphasis on PM control.
2	Member of Public	The traffic in Cheltenham is shocking. Moving around the town difficult. Bus fares are too expensive to incentivise people to use buses and leave cars at home. CBC needs to do much more. We have no bus station - over 25 yrs ago old black and white demolished and turned into a car park ! Royal well needs more facilities. Cheltenham is a festival town yet no decent facilities re public transport. All of this	The Borough’s vision for sustainable travel is detailed in the Connecting Cheltenham report. All levels of Local government are expected to commit to taking action and The Environment Act 2021 reinforces that responsibility for solutions to poor air quality is shared across local government. Cheltenham Borough Council have developed a collaborative approach reflecting the need for upper and lower tiers and key partners to work together to reduce pollution and improve air quality. GCC have

Consultee		Feedback	Response
		poor planning contributes to situation our town is now in.	produced the Local Transport plan to address this and we continue to work with them.
3	Member of Public	<p>Energy crisis leading to more wood burning stoves used. These are particularly polluting.</p> <p>What mitigation actions are we considering for these?</p> <p>How are we enforcing the recent ban on burning green wood?</p> <p>The most polluted junction I know is the bridge over the train tracks where Gloucester Road meets the A40. Average levels are not representative of the harmful photochemical smog there on a sunny and still day. This is a major transit route for Dean Close and Bournside Schools with hundreds of children a day crossing the junction. It is also the main commuter cycle route into/from town. Please set up some monitoring, no results are included in this report.</p>	<p>Technically the action plan only has to deal with reducing pollutants within the declared air quality management area as this is where the identified problem requires specific targeted action within a defined time. NO₂ is the pollutant causing the exceedance, hence the declared AQMA. Wood burning stoves are not the main contributor to the NO₂ problem but as part of a wider action plan, we acknowledge the effect that wood burning stoves have on the levels of PMs and so have now included reference to this. Monitoring is carried out in this vicinity along the A40 and locations can be viewed on our website and within the technical reports.</p>

Consultee		Feedback	Response
4	Member of Public	Lacks concrete action to cut down on or even better prevent use of log burners for domestic heating. These have been shown to be a major cause air pollution in urban areas, they are completely unnecessary and their use is only going to increase as people try and save on heating bills - at the further expense of air quality in residential areas.	See comments above.
5	Member of Public	Too many cars and not enough 'good' cycle provision.	More specific information would enable comments but cycling provision is referenced in this plan and in supporting documents.
6	Member of Public	I believe there is an option to work with the county council and have a county approach to traffic and clean air. Consider changing bus lanes into green lanes. Self fund for green vehicles to pay for a green plate to enable use of the green lane. Approach can be for a 5 year green lane license. Adjust central areas of town into green zones and make some	The new Environment Act strengthens the statutory responsibility for upper and lower tier organisations to work together and this will be reflected as we work through the actions. These initiatives such as green plates will form part of a wider conversation with GCC as with CAZ.

Consultee		Feedback	Response
		spaces in car parks free for green plates. Make county travel aspirational.	
7	Member of Public	We need to build a bypass, so that traffic is taken away from the town , not driven through, The bus service is a failure The cycle path is a failure, we keep building houses, but the roads stay the same, grid lock is on the horizon, without a bypass	The Cheltenham plan in conjunction with the JCS ensures development is assessed in terms of traffic and travel patterns. Comments regarding a bypass will be discussed with GCC and incorporated into any revision if appropriate.
8	Member of Public	Although transport is clearly a major source of air pollution the action plan only focuses on this. It ignores the high levels of pollution created by the generators used to power the events held in Montpellier and Imperial Gardens. The Ice Rink in 2021/22 consumed 34,540 litres of fuel, the Literature Festival 14,004. Add in all the other events and you are looking at in excess of 70,000 litres. How many thousand car journeys through Cheltenham would you need to consume 70k litres? How many tonnes of	Our climate emergency impact assessment tool has been introduced for key decisions and policies. This will highlight activities of concern regarding air pollution. We are also working with Chelt Zero, Cheltenham Festival, Climate Team and our Green Space Team to promote the 'green events code for event organisers. We review our monitoring commitments regularly and will consider the request of specific monitoring sites where appropriate.

Consultee		Feedback	Response
		<p>CO₂ are emitted, how much NO_x and Particulate pollution? It is not just the air pollution but the loss of access to these important green spaces. These events are all due to CBC policies and are totally in their control. There are alternative ways to deliver these events but I do not see anything in the Air Quality Action Plan to address this.</p> <p>The air quality monitoring programme in Cheltenham does not cover the sites where these events take place. This is significant air pollution and both Imperial and Montpellier Gardens should be monitored.</p>	
9	Member of Public	<p>Current WHO guidelines demand air quality standards beyond CBC targets and indicate most areas of Cheltenham beyond the AQAA are unsatisfactory levels of pm2. 5 and nitrous oxides.</p>	<p>The WHO targets are guidelines. They have recently revised the level for NO₂ from 40 to 10µg/m³ and for PM_{2.5} from 10µg/m³ to 5 µg/m³ to reflect that there is no 'safe' level of pollution. Most areas would exceed this level and will be difficult to achieve without substantial investment and commitment but they are levels we would</p>

Consultee		Feedback	Response
			aspire to. New regulations require the UK to achieve as a minimum annual mean levels of PM _{2.5} of 10µg/m ³ by 2040
10	Member of Public	<p>A lot of the plans involve ‘encouraging’ various things such as taxis not idling. It is naive to expect that encouragement will do anything on a large scale.</p> <p>The biggest issue in my opinion is that there is no real plan for alternatives to car. Cheltenham is uniquely placed to be a very car free city because of its size but the infrastructure is so incredibly poor. I would love to cycle locally but it is so dangerous. So many of the roads are narrow and so parked up with cars that there is really only room for traffic in one direction but are still 2 way. In particular, St Paul’s road comes to mind. This makes cyclist incredibly vulnerable as cars try to squeeze past. There are very few proper cycle lanes and to encourage people to feel safe enough to cycle you need proper, segregated lanes. There are some appalling example</p>	<p>It is recognised that some action are more tangible than others. Some are enforceable by law and some are not. Encouragement can have more sustained behaviour change. Enforcement in most cases would always adopt a graduated approach starting with education and encouragement. GCC road safety policy was out for consultation for 8 weeks from 18th July 2022 to 11 September 2022. The long-term aspiration was ‘vision zero’ to aspire to stop all traffic fatalities and serious injuries by 2050, increasing safe and healthy travel for all aiming to increase safety for cycling. We will continue to work with County who have responsibility for pavements and on street parking responsibilities. We will continue to work with GCC on active travel.</p>

Consultee	Feedback	Response
	<p>of cycling infrastructure across Cheltenham including a symbol just being painted on the road, or cycle lanes just disappearing at narrow pinch points. The roads are also full of potholes - unpleasant in a car but potentially lethal on a bike. The Honeybourne line is always full of cyclists (and not just leisure cyclists but people using it as a means of transport) which just goes to show that safe cycle infrastructure is there people will use it. Even for pedestrians most of the pavements are horrible to walk on. I am near this high pollution zone and on the pavements Cars are often parked half on/half off pavements or they are filled with bins. The pavements themselves are filled with cracks or on such a slope that no wheelchair or pram could safely use them.</p> <p>The report clearly identifies the overwhelming issue is from transport yet there are no meaningful solutions for this. You need to have a proper plan for cycling to be a viable alternative, making it pleasant and</p>	

Consultee		Feedback	Response
		reliable and regular bus services for those not able to walk/cycle.	
11	Royal Mail	<p>Royal Mail is proud to deliver a one-price-goes-anywhere universal postal service to residents and businesses in Cheltenham, connecting our customers with the rest of the country. We collect and deliver letters and parcels to every address across the UK and have launched – and are continuing to develop – new services, such as our parcel collection service ‘Parcel Collect’, Sunday parcel deliveries and the expansion of our pharmaceutical delivery services. This requires driving in Cheltenham, including in the proposed Clean Air Zone (CAZ), every day.</p> <p>As part of this, we recognise the impact we have on the environment and take our responsibilities to the communities we serve extremely seriously. As a result, Royal Mail recently launched an ambitious new environment plan, Steps to Zero, which includes</p>	<p>We thank Royal Mail for their update and continued engagement regarding their business operations and the potential impact within the AQMA. No CAZ has yet been proposed. It is an initiative which has been implemented in some urban areas where the data determines it is necessary and further discussions and evaluation by GCC will be necessary.</p>

Consultee	Feedback	Response
	<p>a long term target to bring down the average carbon emissions per parcel we deliver in the UK by c.75%, from 205gCO₂e today to 50gCO₂e. We have also brought forward our net zero target by a decade to 2040. We are committing to near term emissions targets in line with climate science, reducing absolute Scope 1 and 2 greenhouse gas emissions by 25% by 2025/26 and Scope 3 emissions by 25% by 2030, from a 2020/1 base year.</p> <p>Royal Mail is unique in that, unlike other parcel operators, the majority of our last mile deliveries in Cheltenham town involve an element of ‘on foot’ transportation – either our postmen and women use a high-capacity trolley for their entire route, or they use a combination of on foot delivery with some van-based transport that we call “park and loop”. This helps to keep emissions low and reduce congestion with fewer vehicles on the road.</p>	

Consultee	Feedback	Response
	<p>Based on our own analysis, we offer the lowest reported CO₂ per parcel of any major UK delivery operator. Royal Mail is working hard to transform its vehicles to low or zero emission standards. We now have over 3,700 EVs across over 100 sites in the UK. We have made a commitment to increasing this to c.5,000 EVs with an investment of £12.5m in charging infrastructure in 2022/23. We continue to replace diesel vans with electric vans to level-up our operation and to help improve air quality in local communities.</p> <p>Delivering the universal postal service requires a diverse fleet. In Cheltenham, this includes 96 vans and 20 7.5 tonne trucks (transporting the mail between the local mail centre (Bristol Mail Centre, Gloucester Road North, BS34 7ST) and into the Delivery Office each day). We recognise that the Delivery Office is located on the parameter of the proposed zone (on Swindon Road, GL50 4BB) and</p>	

Consultee	Feedback	Response
	<p>have spoken to you before about the impact our vehicles have on Cheltenham. Currently around 50% of the vehicles are compliant under the proposed CAZ. We are striving for 100% of our vehicles to be compliant when the CAZ comes into force.</p> <p>We want to prioritise electrifying Cheltenham Delivery Office but have faced a number of challenges. These include the costs associated with upgrading the power supply to the site which are much higher than elsewhere, and the limited space on site available to us:</p> <p>Two independent contractors have reviewed the site and have come to the same conclusion that introducing EV charging at the delivery office would be extremely challenging. We have instructed a third to review again. This will include load balancing etc. to try and reduce the required electricity supply.</p> <p>This is a difficult site to electrify. At present the only option available is to swap older non-compliant diesel</p>	

Consultee		Feedback	Response
		<p>and petrol vans out with compliant Euro 6 vans.</p> <p>However, we recognise the importance of reducing emissions in Cheltenham and want to work with you to do so. We would therefore welcome the opportunity to discuss this with you to understand if we can work collaboratively to resolve and overcome these challenges. We are equally interested to discuss any plans for funding grants for electric vehicle charging infrastructure. This office uses public parking so we particularly welcome discussion regarding plans for public charging infrastructure and how it might be made available to Royal Mail vehicles.</p> <p>We look forward to hearing from you to discuss how we can work together to electrify Royal Mail's Cheltenham Delivery Office.</p>	
12	Vision 21	<p>Vision 21 has mixed views on the AQAP. The aspirations are good, but the implementation period needs to be timetabled. Also, air quality levels are</p>	<p>We will ensure that all actions have an appropriate time frame assigned. The declaration of an AQMA is a statutory process and made when levels of</p>

Consultee	Feedback	Response
	<p>relatively poor throughout the town and the AQMA itself is only 0.03km² in area, which is too small, since virtually all of the town's population and greater than 99% of the town is actually outside of the AQMA. As such, we ask that the AQMA is extended as quickly as practical to include other parts of the town.</p> <p>Comments on the plan</p> <ol style="list-style-type: none"> 1. Continue to review and develop the Air Quality Strategy for the borough, expanding on the actions and measures outlined in the Air Quality Action Plan through consultation and engagement with partners. We feel it is particularly important that a review is undertaken on an annual basis and the AQAP is revised to meet any new legislation or to take opportunities concerning new planning developments into consideration. 2. Work with Gloucestershire County Council Highways to explore the viability of creating Car-free Zones and/or Emissions Charging Zones. 	<p>pollutants exceed or are likely to exceed set objective/limits. Where the data indicates any exceedance then the management area will be declared. We will continually review the data and act accordingly but the additional wider actions will have benefits across the Town as a whole. Internal progress reports will be submitted every 6 months and an annual status review is submitted to Defra each year. Provisions in the new Environment Act reinforce joint working arrangements between upper and lower tiered Authorities. The levels of NO₂ can be viewed on line and are low except within the AQMA. It is acknowledged that some of the measures can and are being done in house using existing resources but additional resources will be needed for others and we will be further evaluating each measure during the planning phase. We will include the comment on taxis during</p>

Consultee	Feedback	Response
	<p>We want to see greater cooperation between the two authorities and we would like to see active progress towards the introduction of car free zones and possible emission charging zones.</p> <p>3. Aspire to reduce the levels of NO2 below the national target objective of 40µg of NO2/m3 and aim for continuous improvement in this measure.</p> <p>We would like to see active steps included within the AQAP to back up this aspiration and see it stated that new steps will be introduced should any new limitations be introduced during the lifetime of the plan</p> <p>4. Review the borough’s Smoke Control Zones.</p> <p>We agree with this action without comment</p> <p>5. Undertake education and awareness campaigns:</p> <p>a. Engage with NHS Gloucestershire to raise awareness of the effects of exposure to poor air quality where limits are exceeded.</p>	<p>any revision of our Licensing Policy on Private Hire and Taxis.</p> <p>We will maintain a close working relationship with CheltZero as one of our key partners as we progress the action points. We will consolidate existing data regarding travel choices from the Active Travel team at GCC and CBC have an EV roll out programme and are currently consulting on various locations across the town to establish the most appropriate route for delivery. Cheltenham Council is currently undergoing a strategic review of parking looking at how to serve individuals as well as deliver the wider outputs, including the cycle hub consultation which ended on 26th February 2023.</p> <p>We are carrying out a strategic review of car parking and spaces reserved for car sharing will be considered. Regarding the schools project we have secured some resourcing to progress this initiative. We will begin with schools as we feel this targeted</p>

Consultee	Feedback	Response
	<p>b. Create a Public Health Awareness Campaign around high levels of air pollution in partnership with the county council.</p> <p>6. Engage with the university, Gloucestershire College, schools and their students to raise awareness of air quality issues and action possible to improve air quality</p> <p>7. Ensure that the planning and design of the Golden Valley Development sets a standard For high air quality in an urban development.</p> <p>8. Support Gloucestershire County Council's delivery of an expanded Arle Court transport hub to further contribute to higher air quality standards in Cheltenham.</p> <p>We agree with the above statements, but would like to see them timetabled as well as linked along with appropriate resources to CheltenhamZero and Planet Cheltenham</p>	<p>sector will have greatest impact. It could be rolled out to other sectors when resources allow. New PM levels now set by Government</p>

Consultee	Feedback	Response
	<p>initiatives.</p> <p>9. Encouraging investment by all landowners and authorities in rapid charging points for electric vehicles.</p> <p>We agree with this action</p> <p>10. Adopting a policy for licensed taxis and private hire vehicles that immediately remove the most polluting vehicles and achieves a net zero emissions fleet by 2030.</p> <p>We agree with this action, but we would also like to see a policy on taxies standing at taxi ranks, to ensure their engines are not running to power heaters or air-conditioning introduced if there is not one already in place.</p> <p>11. Support Gloucestershire County Council as the local highways authority to deliver modal shift away from private cars, improvement in Cheltenham’s walking and cycling routes by:</p>	

Consultee	Feedback	Response
	<p>a. Developing strategic routes and closure of certain town centre roads to certain vehicle types.</p> <p>b. Promoting cycling and upgrading infrastructure.</p> <p>c. Adopting 'Twenty is Plenty' where possible.</p> <p>d. Apply variable parking charges to incentivise use of EVs and hybrids.</p> <p>e. Promote Workplace Travel Plans</p> <p>f. Promote a 'No Idling Policy' for buses and taxis</p> <p>We agree with all above and encourage that CheltenhamZero and Planet Cheltenham initiatives are engaged with any public awareness raising campaigns</p> <p>12. Using available policy tools to support sectors containing more polluting vehicles to switch to cleaner vehicles:</p> <p>a. Develop partnership for last mile delivery in town centre, by sustainable transport.</p>	

Consultee	Feedback	Response
	<p>b. Build on existing progress to implement alternative fuel sources for business fleet within the council and its partner organisations.</p> <p>13. Investigate setting targets for PM10 and PM2.5 in line with WHO guidance, and emerging DEFRA requirements, due to be announced November 2022.</p> <p>14. Maintain review and when possible expand air quality monitoring locations around the borough.</p> <p>We agree with the above actions, but in 13, resources need to be set aside in preparation for the introduction of more stringent measures.</p> <p>Comments regarding Table 6</p> <p>1 Engage with Royal Mail to move toward low emissions fleet</p> <p>No comment, but support the idea</p> <p>2 Improve data around AQMA (and beyond):</p> <p>A) Commission a study to understand purpose of car trips (including start/end points) through AQMA</p>	

Consultee	Feedback	Response
	<p>B) Single person or multiple occupancy survey</p> <p>C) How car parking generates trips through the AQMA</p> <p>Surely some of this must already have been done and the information available?</p> <p>3 Implement Junction improvements/traffic light changes in vicinity of AQMA</p> <p>Work should begin as quickly as practical</p> <p>4 Create a Public Health Awareness Campaign around high levels of air pollution</p> <p>Should be done as quickly as possible with a front end loading doing much of the work in early years. Invest resources into Planet Cheltenham initiative and invest more into CheltenhamZero Initiative</p> <p>5 Engage with local NHS Trust to raise awareness of the effects of exposure to poor air quality where limits are exceeded.</p> <p>Discussions should be initiated as quickly as possible</p>	

Consultee	Feedback	Response
	<p>6 Ensure that the planning and design of the Golden Valley Development sets a standard for high air quality in an urban development including consolidation opportunities to reduce deliveries through AQMA</p> <p>We support the action.</p> <p>7 Develop partnership for last mile delivery in town centre, by sustainable transport</p> <p>We support the action</p> <p>8 Offer more EV charging points in the streets surrounding the AQMA</p> <p>We support the action but want it extended across the other parts of town</p> <p>9 Extend the existing priority parking areas for Electric Vehicles within parking areas of AQMA</p> <p>We support the action</p> <p>10 Install Rapid Charging Points for Electric Vehicles</p> <p>Expedite this action</p>	

Consultee	Feedback	Response
	<p>11 Increase Car Sharing in AQMA</p> <p>Approach a car sharing company and consider providing one or more dedicated parking places, promote its identification and reserve it for community shared vehicles only.</p> <p>12 Continue to review and development of Air Quality Strategy for the borough, expanding on the actions and measures outlined in the Air Quality Action Plan through consultation and engagement with partners</p> <p>Essential to continue and review</p> <p>13 Aspire to reduce the levels of NO2 below the national target objective of 40µg of NO2/m3 and aim for continuous improvement in this measure</p> <p>We support this action</p> <p>14 Investigate setting targets for PM10 and PM2.5 in line with WHO guidance, and emerging DEFRA requirements</p>	

Consultee		Feedback	Response
		<p>Need to up the game, the council needs to be ready to react to them as quickly as possible</p> <p>15 Deliver a Schools AQ Project</p> <p>Why stop at schools. Invest more in CheltenhamZero project to deliver info to businesses.</p>	
13	Member of Public	<p>I live within the AQAP and traffic is worse than ever across Swindon Road especially in 2022!. The plan has not looked at increased demand and has relied on data which is no longer relevant and focuses only on decarbonizing the transport with little or no reference to providing better cycling links along the A4019, (yes the road is wide enough to include a separate cycling lane down the whole AQAM area. As a resident of xxxx Street it makes reference to putting in electrical charging points however as a cyclist and non-car owner, I have little or no space to leave the bicycle inside the house, there are no safe cycling hangers within the area. Also every side street attached to the AQAM</p>	<p>To support the Connecting Cheltenham report we recently consulted on provision of a new cycle hub for the town centre to promote travel by bicycle. This closed on 26th February. We continue to work with our climate change team on areas which overlap air quality and steps to net zero. See point 10 for road safety comments. With regard to trees within the AQMA there are a number of native species along the AQMA. Recent planting of hawthorn and field maple has been carried out in Poole way car park. We will encourage Royal Mail to add additional vegetation on their boundary with advice from CBC Tree Officer. We have made a commitment to develop an SPD on air quality which</p>

Consultee	Feedback	Response
	<p>zone should be a 20mph speed limit. The amount of cars that speed, accelerate into the road is not only dangerous but it emits a lot more pollution. It would be good to see more trees along the route and new builds to consider having green walls. It is shame to have to live within this area where I cannot keep the windows open and the need for air purifiers are necessary.</p> <p>I believe the link between the brewery and car park should include either an overpass/underpass to ensure better pedestrian provision whilst allowing the traffic to flow better.</p> <p>It is also interesting that the Lidl supermarket went through planning very easily without any remarks on air pollution and it is clear this supermarket has increased the traffic within this area.</p> <p>I look forward to seeing substantial changes to this plan as electrifying transport is great for Nitrogen</p>	<p>would clarify the role trees may play in removing pollutants. The role of PMs has been included in the wider action plan.</p>

Consultee		Feedback	Response
		Dioxide yet it doesn't change the PM2.5 that includes brake dust etc	
14	Member of Public	Not bold enough.	Not enough information provided
15	Member of Public	The draft plan is totally lacking in substance. It is very vague and there is little in the way of concrete ideas. Cheltenham has been monitoring pollution on and off for years, but no action has actually been taken to make the radical steps needed to make an effective change. This is a huge wasted opportunity and another 5 years will roll by with no action. I totally support the response made to this draft by the Clean Air Cheltenham group.	The draft plan developed by our experts and partners identified measures which bring about the most reduction in the pollutants which are causing most concern. We continue to meet our monitoring obligations which help inform data driven decision making.
16	Cheltenham and Tewksbury Cycling Group	With motor vehicles being a major emission source in Cheltenham for both NOx and PM, increasing rates of cycling would be one of the most rapid and effective ways of improving air quality within our urban area. It offers an accessible mode of travel that can replace many short journeys of one to three miles, and	Cycling comments are addressed in our Connecting Cheltenham Strategy report. The action plan was produced in response to the exceedance of NO ₂ and so reduction of petrol and diesel vehicles is the main focus. We acknowledge that this does not eliminate sources of PM and

Consultee	Feedback	Response
	<p>through reducing short-trip congestion, offers benefits to improving reliability of public transport and other modes for longer journeys. Well designed initiatives supporting walking and cycling have been shown through independent research to deliver the multi percentage point benefits in air quality that are needed.</p> <p>Having reviewed the action plan, the committee would like to record the following observations;</p> <p>The strategy prioritises electric vehicle initiatives for improving air quality. These cannot equitably solve the challenges the council is facing within reasonable timescales. Electric vehicles are generally heavier, can present greater road danger, and still emit significant particulate matter from tyre and brake wear. We believe the strategy should instead adopt a clear hierarchy of measures, beginning with walking and cycling, rather than assuming very little modal share can be achieved.</p>	<p>recognise the additional health benefits that cycling brings. The LCWIP is owned by GCC Transport planning team. Comments will be forwarded to them for inclusion in any revision and we continue to work with GCC and our Climate Change Team on this area. See comments regarding consultation for a cycle hub in the town centre. We have secured some resourcing to work with schools which will include measures to reduce pollution at the school gates.</p>

Consultee	Feedback	Response
	<p>Our assessment is that the LCWIP for Cheltenham (referenced p22), which the strategy relies on to deliver change, is incomplete and out of date. It omits several significant desire lines, particularly from the north west and south east of Cheltenham, and includes no meaningful cross-centre connectivity.</p> <p>There needs to be co-produced work now to progress Connecting Cheltenham to develop a truly ambitious plan for cycling in Cheltenham, and a plan for implementation.</p> <p>We note the particular challenge of the area of exceedance surrounding Poole Way and its connection to the Lower High Street. The proposals to improve traffic in this area also need to acknowledge that the east-west corridor represents a major bottleneck to cycle routes into the town centre. Increasing vehicle speed or capacity should not be allowed to further increase hostility to cycle users in this area. We hope there will be opportunities to work</p>	

Consultee	Feedback	Response
	<p>with the authority throughout the process of attempts to address traffic levels in this area.</p> <p>A small, initial intervention would simply be to provide appropriate cycle parking and access for the royal mail depot and collection point, which currently offers no active transport opportunity. There is also opportunity with the neighbouring mini-holland scheme being developed by Gloucestershire County Council to simplify motor vehicle flows by reducing the substantial traffic flows into Swindon Road and Townsend Street, reducing idling times and junction phasing.</p> <p>The report also references Cheltenham General Hospital. As previously highlighted in our consultation response to the Connecting Cheltenham, the hospital lacks convenient and direct cycle connections, particularly from Back Montpellier Terrace along Sandford Road. An education campaign targeting the local NHS acute Trust will not be successful without</p>	

Consultee	Feedback	Response
	<p>enabling measures to support modal shift on key transport corridors to the site.</p> <p>We believe the plan would be improved by specifically considering ‘school-run’ sources of congestion, which receives only brief reference around education campaigns. With the pausing of further rollout of Gloucestershire County Council’s school streets programme, we see a significant gap in plans to address the air quality challenge that these short trips create. The council should include a clearer statement on how it believes school-run motor vehicle traffic can be reduced, and the practical support beyond education that it could offer to schools who want to enhance their active travel offer.</p> <p>The action plan places all responsibility for improving cycling infrastructure on Gloucestershire County Council. We suggest that Cheltenham Borough Council needs to recognise the very significant assets it has within its own control, and that it can take steps</p>	

Consultee	Feedback	Response
	<p>to improve routes away from the highway network, particularly through upgrading park routes, removing barriers that exclude the full range of accessible cycles, and substantially increasing secure cycle parking availability across retail centres.</p> <p>The council also needs to recognise the very significant role the Honeybourne Line will play in any future mobility plan, and that the current shared space arrangement is already struggling to support meaningful cycle speeds. We encourage Cheltenham Borough Council to focussed dialogue with Gloucestershire County Council on a clear maintenance and upgrade pathway, recognising the role of this key link within the highway network for non motorised vehicles.</p> <p>Overall, we believe that to improve air quality, a significant number of private motor vehicles need to be replaced by sustainable transport. The current plan will not deliver this.</p>	

Consultee		Feedback	Response
		<p>Indeed, there is a major risk that attempts to improve traffic flow and speed will paradoxically induce additional trips through increased motor vehicle convenience, leading to further deterioration in air quality and more adverse conditions for cycling.</p> <p>To truly reduce transport emissions, the evidence shows that bold steps are required to significantly reduce motor vehicle dominance. Whilst this will inevitably require greater collaboration with Gloucestershire County Council, we believe there are interventions where Cheltenham Borough Council can show meaningful leadership, and we hope there are opportunities to work with you to deliver these as the plan moves forwards.</p>	
17	Member of Public	<p>Cheltenham's air quality challenges are very localised. The biggest impact would be preventing traffic from queuing at the west side of High Street - looking at traffic light phasing particularly.</p>	<p>New traffic signals were installed on the A4019 and contribute to reducing congestion and thus emissions</p>

Consultee		Feedback	Response
18	Member of Public	<p>the omission of the impact of open fires, wood-burning stoves and garden bonfires.</p> <p>Why is air pollution from these sources and measures to control it not included anywhere in the draft plan?</p> <p>Why is there no part of the draft plan that deals with garden bonfires</p>	<p>More detail on SCA included. Bonfires are dealt with under our statutory nuisance provisions but we recognise the opportunity to provide information on the impact on air quality of such burning.</p>
	Clean Air Cheltenham	<p>https://www.cleanaircheltenham.org/response-to-the-draft-agap/</p>	<p>We thank Clean Air Cheltenham for their detailed comments. This plan aims to compliment not repeat existing work streams, plan, policies and statutory functions. Additional actions have been included for PM control such as reviewing smoke control areas and acknowledging the role of clean air zones.</p> <p>We will continue to work closely with Gloucestershire County Council and partners through our Gloucestershire Air Quality and Health Partnership. GCC are working to fill staff vacancy of Air Quality officer and we are exploring</p>

Consultee		Feedback	Response
			<p>the option for a CBC air quality officer post to help fulfil our ambitions and to ensure communication between County and all Districts continues. We provide monitoring data to GCC for inclusion on their website. GCC sustainability team have created a power BI report webpage with all districts air quality data collated. It will be hosted on GCC Greener Gloucestershire's page. GCC are awaiting approval for website software. We are working with GCC sustainability team on their bidding process for supplementary monitoring for PMs. We support the bid for funding for Mini Holland in Cheltenham in St Marks and the Honeybourne line.</p>

Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Taxi emission incentives	Incentivising Taxi fleet to use electric vehicles	CBC have recently completed a campaign to ensure Taxis are suitable for accessibility. This will make it unlikely to be able to find funding to also encourage immediate adoption of Electric Vehicles among taxi drivers so soon after expectations have been put in place to update vehicles for accessibility.

Appendix C: Detailed Modelling Report

Appendix D: Response to Draft Comments

Through the Draft Consultation phase, the draft version of this report was appraised by Defra and the following comments were made. These are set out below with Cheltenham's responses in green to cover the additional required inputs.

1. Generally speaking, it does not appear as though the comments made through the appraisal of the Draft AQAP have been addressed. If they have, this should be made clear.

This updated version accounts for the draft comments.

2. It is also unclear how the Draft and Final AQAP documents are intended to be read – the supporting information within the Draft document should be made available for readers to investigate the production further, should they wish. References to this should therefore appear throughout the Final version.

This updated version of the report has amended the structure to address this comment.

3. The measures table should be updated to the format of the most recently templated version (released March 2022).

The latest version of the AQAP template including the measures table has been used for this version of the AQAP.

4. The PHOE fraction of mortality indicator can be updated.

This has been updated.

5. Some form of consideration, whether that be through dispersion modelling or otherwise, of the likely impacts of the scale of development proposed within the new Local Plan would be beneficial, to ensure the compliance currently achieved within the AQMA will continue into the future. There is limited projection of future concentrations within Appendix E, beyond linear forecasts based on roadside projection factors.

Additional information on significant projects and development as part of the local plan has been added into this version of the Action Plan. Quantification of several measures is now included to account for future concentrations beyond the roadside projection factors.

6. As per Box 7.5 of LAQM.TG(22), source apportionment for NO₂ should be included. This should also include the local and regional background component. This will allow for a clearer understanding of the make-up of total ambient concentrations, and the sources that the local authority may have direct control over.

This has now been included.

7. Source apportionment should also be more explicitly referenced in the measures themselves, to ensure that the most significant sources are being effectively targeted. There is little reference within the measures, for example, LGVs are the second largest source but are only indirectly referenced in one measure. Indeed, this is referenced in Appendix E 'measures should be targeted at reducing vehicle emissions from all vehicle types, notably Cars and LGVs, which are both observed to be the two largest contributors to total vehicle emissions in areas of exceedance.' but hasn't been well carried through to the AQAP.

Within the updated measures, reference is now given to how the source apportionment has been used to inform the measures. Additionally, a cost-benefit analysis is now included to align with the latest AQAP template.

8. The calculations supporting the estimated road NO_x reductions required to achieve compliance should be provided to ensure these have been robustly calculated.

This has now been included in the latest version of the AQAP.

9. In respect of priorities, the first priority of an AQAP should always be to bring about and maintain compliance with the AQS objectives.

Text has been amended to clarify that this is the priority of the Action Plan.

10. The AQAP determines qualitatively that the actions are likely to be effective, but doesn't accurately quantify any of the specific measures' impacts, which would help the reader to understand the relative merits of particular interventions. As per paragraph 2.85 of LAQM.TG(22), an AQAP should contain quantification of the impacts of measures as a minimum. This could be aided by updated dispersion modelling, which has already been produced in support of the AQMA/AQAP, or else via qualitative estimation of likely impacts.

Included discussion on measure quantification and greater detail.

11. It is not very clear how the qualitative target pollution reductions listed for some of the measures have been determined.

Included discussion on measure quantification and greater detail.

12. More specificity could be added to the list of measures, which are generally strategic in nature. Hyper local sources, or impacts on dispersal of emissions, could also be targeted to improve areas of elevated concentrations.

Additional detail has been provided on the proposed measures.

13. The measures would also still benefit from a detailed cost/benefit analysis, as it is currently unclear to the lay person which of the measures will be most cost effective, and which will achieve the greater pollutant reductions.

This is now included.

14. Expected costs of the measures are often vague. Details of funding sources could also be more clearly determined, as at present this throws some doubt on the likelihood of the implementation of the measures.

Many measures at this stage are best estimates. Costs are those directly for CBC, rather than costs to other agencies (such as the county for Arle Court P&R) or other groups (taxi drivers).

15. It is assumed the table in Appendix A will be expanded to include responses from the statutory consultees in the Final AQAP. This should also include responses to feedback received from the Council themselves, which signpost within the document where the consultation comments have been enacted, or otherwise, with supporting justification.

Comments in Appendix A have been included.

16. The composition of the Steering Group has been discussed in good detail. Please ensure the Steering Group will be maintained through implementation, to ensure the AQAP remains relevant and is enacted, as is the stated intention. Details of the outcomes of future meetings could also therefore be provided within future updates.

This is noted.

17. If in the interim period compliance with the AQS objective has been achieved, as is indicated by 2021 concentrations, the Council could consider retaining an updated version of this Plan to form the basis of a local air quality strategy for the AQMA (or to enhance the existing one for the wider borough) as per paragraph 4.12 of LAQM.PG(22).

This is noted.

18. Within Appendix E of the Draft, it was identified that there are exceedances along stretches of other arterial roads connecting to the Town Centre (A4013 Princess Elizabeth Way, Benhall Roundabout, A46 London Road/Berkley Street intersection, and A46 Shurdington Road). Whilst additional monitoring is mentioned, there is little reference to this within the AQAP, which could be added. It is however recognised that it is likely that current concentrations are far lower than those modelled in 2019.

This is noted.

19. Whilst an acceptable approach within LAQM.TG(22), the justification for splitting the dispersion modelling within Appendix E to two distinct verification zones should be expanded upon, beyond 'to provide a more location specific factor for the AQMA'. What are considered to be the factors which are causing the model to perform differently within the AQMA that the model is not perhaps accounting for?

This has been updated within the detailed modelling appendix (page 43).

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
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
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
CBC	Cheltenham Borough Council

References