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Gloucester City 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

2024

| Information | Gloucester City Council Details |
| --- | --- |
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# Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management (LAQM) framework. It outlines the actions we will take to improve air quality in Gloucester City Council between 2025 and 2030. 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 a draft version and will be adopted in 2025. Implementation of the outlined measures will result in the relevant objective being attained in 2025 following a review of the diffusion tube data.

The relevant Air Quality Management Area (AQMA) addressed by this AQAP is outlined below:

* Priory Road AQMA – this AQMA was declared for the exceedance of the annual mean NO2 in 2005. This AQMA includes an area encompassing the junction of St Oswalds Road and Priory Road. Monitoring undertaken within this AQMA has recorded 36.7µg/m-3 at 56 Priory Road (site ID 24) in 2021 and therefore will not be considered suitable for revocation until 2025. Concentrations at this site and within the AQMA in 2022 and 2023 were below 10% the annual mean NO2 objective.

At the time of writing, the following two AQMAs are also declared within the Gloucester City Council area:

* Painswick Road AQMA – this AQMA was declared for the exceedance of the annual mean NO2 in 2007. This AQMA includes a number of properties on either side of Painswick Road, Gloucester. Monitoring undertaken within this AQMA has recorded concentrations below 36µg/m-3 consistently for five years and therefore is considered to be suitable for revocation.
* Barton Road AQMA - this AQMA was declared for the exceedance of the annual mean NO2 in 2005. This AQMA includes an area encompassing Barton Street, Gloucester from its junction with Trier Way/Bruton Way to the north west and Upton Street to the south east. Monitoring undertaken within this AQMA has recorded concentrations below 36µg/m-3 consistently for four years and therefore is considered to be suitable for revocation.

This AQAP therefore does not consider these AQMAs but the modelling study previously undertaken does make reference to them.

This action plan replaces the previous action plan which was published in 2008 and subsequently reviewed in 2011. Projects delivered through the past action plan include:

* Encouragement of sustainable transport, a reduction in local trips taken by private car;
* Traffic management, in the form of improvements of traffic signals and measures to reduce illegal parking; and
* Vehicle fleet efficiency measures, such as introduction taxi licensing conditions, instigating upgrades to the local bus fleets and prioritising low emission vehicle uptake at the Council.

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]](#footnote-2),[[2]](#footnote-3).

The UK Health Security Agency (formally Public Health England) has estimated that the costs of air pollution in England to health and social care services could reach between £5.3 and 18.6 billion between 2018 and 2035 [[3]](#footnote-4). Gloucester City Council is committed to reducing the exposure of its resident to poor air quality in order to improve health.

We have developed actions that can be considered under three broad topics:

* Transport – including the development of cycle lanes, development of a car club in Gloucester and encouraging scooter/cycle rental;
* Planning and infrastructure – including the provision of Supplementary Planning Guidance for developers and the installation of electric vehicle (EV) charging points in Council car parks; and
* Behavioural change and campaigns – including schools initiatives, the promotion of sustainable/active travel and an air quality information database.

Therefore our priorities are:

* Transport;
* Planning and Infrastructure; and
* Behavioural Change and Campaigns.

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) 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 Gloucester City Council’s direct influence.

## Responsibilities and Commitment

This AQAP was prepared by Bureau Veritas and the Community Wellbeing Department of Gloucester City Council with the support and agreement of the following officers and departments:

* Climate Change Team
* County Public Health
* Gloucester City council Portfolio holder
* Highways
* District Local Authorities
* Gloucester County Council

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

If you have any comments on this AQAP please send them to Gupti Gosine at:

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# Introduction

This report outlines the actions that Gloucester City Council will deliver between 2025 and 2030 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 the local authority’s administrative area. 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 draft version and will be adopted in 2025.

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.

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 Gloucester City Council’s air quality ASR.

# Summary of Current Air Quality in Gloucester City Council

## Air Quality Management Areas

Gloucester City Council currently has three designated AQMAs:

* Painswick Road AQMA;
* Barton Street AQMA; and
* Priory Road AQMA.

All the above AQMAs have been declared due to exceedances of the air quality annual mean objective for nitrogen dioxide (NO2) of 40 μg/m3. The exceedances are most likely due to emissions from road traffic along the city’s road network and were declared with the source of County or Unitary Authority Road. As such, existing monitoring within Gloucester is focussed within known ‘hotspots’ along the roadside.

Following a number of years of concentrations below the annual mean NO2 concentration within Barton Road and Painswick Road AQMAs it was recommended that these AQMAs were revoked.

Revocation of the Priory Road AQMA was not recommended at this time and the AQAP was therefore developed for this AQMA.

Figure 1 – Priory Road AQMA



During 2023, NO2 was monitored at 25 locations using passive diffusion tubes, comprising 21 roadside sites and four urban background sites. There is no automatic monitoring undertaken within the jurisdiction of Gloucester City Council.

Focussing on the monitoring undertaken within the AQMA, Table 2.1 provides the annual mean NO2 concentrations for the monitoring sites located within the declared AQMA, of which there are three sites.

Exceedances of the 40 μg/m3 annual mean objective for NO2 are highlighted in bold. Although there were no exceedances of annual mean NO2 in 2023. Diffusion tube 24 was within 10% of the annual mean objective for NO2 in 2021.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site ID** | **X OS Grid Ref (Easting)** | **Y OS Grid Ref (Northing)** | **NO2 Concentration (μg/m3)** | | | | | |
| **2018** | **2019** | **2020** | **2021** | **2022** | **2023** |
| 23 | 382898 | 219029 | **46.3** | **40.5** | 29.5 | 34.1 | 31.1 | 28.4 |
| 24 | 382921 | 219034 | **47.4** | **43.0** | 32.5 | 37.6 | 33.4 | 33.0 |
| 25 | 382950 | 219040 | **47.1** | **43.2** | 31.9 | 35.1 | 33.2 | 30.8 |

Diffusion tube 24 was within 10% of the annual mean objective for NO2 in 2021 and although there have been no exceedances of the annual mean air quality objective for NO2 since 2019 revocation is not yet recommended. Concentrations in 2020 are likely to have been impacted by the covid-19 pandemic and the changes in traffic patterns. Further data collection is needed to ensure the decreasing trend in NO2 continues.

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 |
| Priory Road AQMA | 08/08/2005 | NO2 Annual Mean | An area encompassing the junction of St Oswalds Road and Priory Road. | NO | 48 | 33.0 | 2 |

## Public Exposure

The Air Quality Indicator in the Public Health Outcomes Framework (England) (PHOF) 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 Directions of Public Health[[4]](#footnote-5)” 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 latest Public Health Outcomes Framework Indicator number D01 - Fraction of mortality attributable to particulate air pollution (New Method) for Gloucester was noted to be 6.0% in 2022, slightly increased from 5.8% in 2021 but decreased from 7.1% in 2019. This is higher than the average for the South West region of 4.6% in 2022 and above the average for England at 5.8% attributable to air pollution.

To further understand the number of the population of Gloucester exposed to poor air quality, a review of the Indices of Multiple Deprivation (IMD) is also included.

This has been completed using the Office for National Statistics ‘Lower Super Output Area’ (LSOA) information.

The number for the IMD are based on deciles of multiple factors of deprivation. The larger the score, the more deprived the area. Shrewsbury has a IMD of 7 out of possible 10 with the 10th indices being the least deprived areas of England.

Priory Road is within the ward of Westgate which has a IMD[[5]](#footnote-6) of 2 out of possible 10 with the 10th indices being the least deprived areas of England. Westgate is therefore within the top 20% of deprived areas in England.

Within the Priory Road AQMA there are 14 dwellings and we therefore estimate a population of 21 within the AQMA base on the 2021 census which details 57.5% of the area is a one person household and 30.5% of the dwellings as a two person household.

# Gloucester City Council’s Air Quality Priorities

This chapter presents the main drivers and the approach taken by Gloucester City Council for the development and subsequent selection of measures that have been included within this AQAP.

The detailed modelling study[[6]](#footnote-7) carried out in 2020 also included a source apportionment study, focusing on the existing AQMAs. The source apportionment study has allowed the most significant sources of oxides of nitrogen (NOX) vehicle contributors to be identified. NOX species 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. Under most atmospheric conditions, the dominant pathway for NO2 formation is via the reaction of NO with ozone (O3).

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 measures contained within this AQAP.

## Public Health Context

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[[7]](#footnote-8). Studies have shown that long-term exposure to air pollution reduces life expectancy, with short-term exposure impacting on pre-existing conditions such as asthma[[8]](#footnote-9).

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. The Committee on the Medical Effects of Air Pollution (COMEAP) provide advice to Government relating to air pollution. COMEAP has increasingly sought to consolidate evidence on the health burden and impacts of various pollutants, both in single occurrence and pollutants in combination. In terms of NO2, COMEAP provide a current range of estimate for annual mortality burden for human-made air pollution in the UK is estimated to be between 28,000 and 36,000 deaths and an associated loss of population life of 328,000 and 416,000 life years lost.

Local authorities across England have a central role in achieving improvements in air quality and have a range of powers which can effectively help to improve air quality. The involvement of public health officials is crucial in playing a role to assess public health impacts and provide guidance on taking appropriate action to reduce exposure and improve the health of everyone within Gloucester. This is particularly relevant since the Gloucester AQMAs are in areas of deprivation, which means that those most likely to be exposed to poor air quality are those who are already at a disadvantage. Improving air quality in these areas would therefore feed into wider plans to reduce health inequalities.

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 impact on the delivery of air quality improvements. The “Air Quality – A Briefing for Directors of Public Health[[9]](#footnote-10)” 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.

Besides NO2, there is an increasing focus on fine particulate matter. Specifically, PM2.5 is a pollutant of concern, meaning particulate matter which is 2.5 microns or less in diameter. The Public Health Outcomes Framework data tool[[10]](#footnote-11) compiled by Public Health England quantifies the mortality burden of PM2.5 within England on a county and local authority scale. The latest Public Health Outcomes Framework Indicator number D01 - Fraction of mortality attributable to particulate air pollution (New Method) for Gloucester was noted to be 6.0% in 2022, slightly increased from 5.8% in 2021 but decreased from 7.1% in 2019. This is higher than the average for the South West region of 4.6% in 2022 and above the average for England at 5.8% attributable to air pollution.

It should be noted that this figure only accounts for one pollutant (PM2.5) for which stronger scientific evidence on links with mortality exist, and not NO2, for which the AQMA is declared, so the true figure is possibly even higher.

Furthermore, following on from a review of research into the death burden associated with the air pollution mixture rather than single pollutants acting independently, COMEAP are currently reviewing the ability to link deaths to one specific pollutant.

The Gloucestershire Joint Health and Wellbeing Strategy 2019-2030[[11]](#footnote-12) sets out the key priorities that the health and wellbeing board sought to deliver. The seven priorities are set out below:

* Physical activity;
* Adverse Childhood Experiences (ACEs);
* Mental wellbeing;
* Social isolation and loneliness;
* Healthy lifestyles;
* Early years and best start in life; and
* Housing.

While these priorities are not directly aiming to tackle air quality, reducing pollutant concentrations will have a positive effect on public health.

In addition, the Gloucestershire Air Quality and Health Partnership have developed the Gloucestershire Air Quality and Health Strategy[[12]](#footnote-13). The strategy describes the strategic approach in Gloucestershire to improving air quality and mitigating its impact on health as it relates to nitrogen oxides and particular matter. It has been developed to be delivered across agencies, professionals and members of the public who are active in Gloucestershire.

## Planning and Policy Context

This AQAP details the Council’s plan to effectively tackle air quality issues within its control; however, it is recognised there are numerous existing and upcoming policies and strategies adopted at local, regional and national level that may also affect air quality in Gloucester. It is important that these plans and strategies are identified and taken into consideration when developing the plan.

A review of these strategies and policies ensures this Plan does not duplicate existing work to improve air quality but instead contributes to their overall aims. This section outlines the strategies and policies that have the most significant potential to impact on pollutant concentrations within Gloucester.

### Clean Air Strategy 2019

The Clean Air Strategy[[13]](#footnote-14) has been published to set 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 AQMAs currently present within Gloucester). It 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. In fact, this has since been updated in line with net-zero targets, with sales of new petrol and diesel cars to end in the UK by 2030[[14]](#footnote-15);
* New legislation to compel vehicle manufacturers to recall vehicles and non-road mobile machinery (NRMM) 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. This action would not necessarily target reductions in NO2 for which the Gloucester AQMAs have been declared, but would help to lower existing concentrations of PM;
* The encouragement of the cleanest modes of transport for freight and passengers; and
* Permitting approaches for the reduction of emissions from non-road mobile machinery, especially in urban areas.

### UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations

Published in July 2017, the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)[[15]](#footnote-16) is the UK government plan for bringing concentrations of NO2 within statutory limits within the shortest possible time. It is identified 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 identified by the national Pollutant Climate Mapping (PCM) model as being in exceedance of the NO2 annual mean AQS objective.

Gloucester City Council were not one of the authorities identified, regardless, the UK Plan provides a high level of detail on possible solutions, and their implementation, to reduce NOX emissions from vehicles, and therefore lower NO2 concentrations.

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

The Joint Core Strategy (JCS)[[16]](#footnote-17) is an important part of the development plan for Gloucester City, Cheltenham Borough and Tewkesbury Borough and seeks to set out long-term vision and objectives for the area together with strategic policies for shaping new development. Strategic Objective 9 is considered relevant with regards to air quality, specifically the text in bold, and is set out below.

*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; and*
* ***Ensuring that environmental quality and air quality is protected.***

### Gloucester City Plan

Together with the JCS, the Gloucester City Plan (GCP)[[17]](#footnote-18) further guides development of the City of Gloucester, by providing the development framework to guide the City's future growth up to 2031. The GCP has now been submitted to the Planning Inspectorate, when the Inspector will examine whether the submitted plan meets the tests of soundness defined in the National Planning Policy Framework and meets all the relevant legislative requirements.

Using the pre-submission documents, the following policies have been identified as relevant to Air Quality:

***POLICY B3: New employment development and intensification and improvements to existing employment land.***

*Development proposals for new ‘B’ class employment development, and/or to improve the quality of accommodation, the environment and intensify the use of existing employment sites will be supported where the following criteria are met:*

*1. Any increase in traffic can be accommodated by the transport network; and*

*2. Satisfactory vehicular access, parking and manoeuvring space can be provided; and*

*3. The proposal would not result in significant adverse impact on the amenity of neighbouring uses, particularly residential properties; and*

*4. The scale and design of the proposal is compatible with the character of the location; and*

*5. It would not result in unacceptable adverse environmental impacts, for example in terms of noise, air, water, soil or light pollution.*

***POLICY C5: Air Quality***

*Proposals for major development must demonstrate compliance with EU limit values and achieving national objectives for air pollutants. Proposals must:*

*1. Not create a new “street canyon”, or a building configuration that inhibits effective pollution dispersion;*

*2. Minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads, or directing combustion generated pollutants through well sited vents or chimney stacks;*

*3. Use green infrastructure, trees and hedgerows, to absorb dust and other pollutants;*

*4. Provide infrastructure that promotes modes of transport with low impact on air quality; and*

*5. Control dust and emissions from construction, operation and demolition.*

*Within the city’s Air Quality Management Areas (AQMAs) and in areas near schools and hospitals, development which reduces tree cover, hedges and other forms of vegetation will be expected to make provision for a net gain in vegetation onsite and/or within the relevant buffer zone. The use of green roofs and walls in these areas will be strongly supported along with other suitable measures to increase vegetative cover.*

***POLICY G2: Charging infrastructure for electric vehicles***

*An electric vehicle charging point/socket will be provided at every new residential property which has a garage or dedicated residential car parking space within its curtilage. In all other new residential properties, the provision of electric vehicle charging points/sockets will be strongly encouraged where, in the opinion of the City Council, it is reasonable to do so and where it is technically feasible. For non-residential development which provides 100 or more car parking bays, at least 2% of bays should be utilised for the provision of rapid charging points for electric vehicles. Exceptions will only be made where the applicant can demonstrate the local electricity network is technically unable to support this.*

### Gloucestershire Air Quality and Health Strategy

The Gloucestershire Air Quality and Health Strategy12 was adopted in 2019 and identifies links and opportunities for joint working under its six strategic objectives:

* Public engagement;
* Air quality monitoring and information;
* Active travel;
* Planning and policy;
* Ultra-Low Emission Vehicles; and
* Cleaner fleets and public transport.

Therefore, the objectives of the strategy readily align with the aims of this AQAP.

### ‘Climate Emergency’ Declaration

In 2019, Gloucester City Council declared a climate emergency. At this point, the council made a commitment to carbon neutrality by 2050, however, in advance of COP26 the city council’s cabinet has made a pledge to join the UK100. UK100 is a network of highly ambitious local government leaders doing everything in their power to achieve net carbon zero as soon as possible, and by 2045 at the latest – exceeding the national target. As a condition of UK100 membership, Gloucester City Council will bring forwards its target of being net carbon zero by 2050 by five years.

Climate change action primarily deals with emissions of carbon dioxide (CO2) and other greenhouse gases, whereas the focus of this AQAP is on reducing NO2 within the AQMA. However, it’s important to note there are links between the two disciplines, as any reductions from transport emissions which have come about as a result of 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 2020[[18]](#footnote-19). As shown in Figure 5 and Figure 5.1 of the infrastructure plan, a series of improvements have been suggested for Gloucester, including improved signage, improved access and cycles lanes through 20 mph zones.

## Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within Gloucester City Council’s area.

A source apportionment exercise was carried out by Gloucester City Council as part of the Detailed Modelling Study for several vehicle types in 2020. The source apportionment study also included Barton and Painswick Road AQMAs and detailed of these AQMAs can be found in Appendix C.

A source apportionment exercise provides different vehicle NOX contributions as a proportion of the total NOX concentration. This provides an opportunity to develop specific AQAP measures targeting a reduction in emissions from a specific vehicle type(s).

The following vehicle classes were modelled:

* Petrol and Diesel Cars;
* Petrol and Diesel LGVs;
* Rigid and Artic HGV;
* Buses;
* Motorcycle;
* Full Hybrid Petrol Cars;
* Plug-in Hybrid Petrol Cars;
* Full Hybrid Diesel Cars; and
* EV Cars.

Receptors were modelled along the façade of residential dwellings on Priory Road within the AQMA using ADMS Roads 5.0 and road traffic from the Department for Transport (DfT) and Gloucestershire County Council. The full modelling methodology is available within the Gloucester AQMA Technical Report produced by Bureau Veritas[[19]](#footnote-20) included in Appendix C. The technical report was prepared in 2020 but the findings of the report are considered to remain valid for the Priory Road AQMA.

The source apportionment modelling undertaken, identified that within the AQMA, the predominant source contributions were apportioned to local road traffic, specifically 66.9% when compared to regional and local background concentrations for NOX and 55.7% for NO2.

The percentage source contributions within Priory Road AQMA were as follows for total road NO2: Diesel Cars accounted for the greatest contribution (47%) of any of the vehicle type, followed by Diesel LGVs (30%) and Bus/Coach (9%).

Figure – NO2 Source Apportionment Results Priory Road AQMA

A pie chart with different colored circles

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Table 3.1 NOX Source Apportionment Results

| **Results** | **All Vehicles** | **Car** | | | | | **LGV** | | | | | | **HGV** | **Bus and Coach** | **Motorcycle** | | **Background** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Petrol** | **Diesel** | | **EV/LPG** | | **Petrol** | | **Diesel** | | **EV/LPG** | |
| **Average across all modelled receptors** | | | | | | | | | | | | | | | | | |
| **NOX Concentration (µg/m3)** | 49.5 | 3.2 | 23.3 | | 0.0 | | 0.0 | | 15.0 | | 0.0 | | 3.5 | 4.4 | 0.1 | 24.6 | |
| **Percentage of Total NOX** | 66.9% | 4.3% | 31.4% | | 0.0% | | 0.0% | | 20.2% | | 0.0% | | 4.8% | 5.9% | 0.2% | 33.1% | |
| **Percentage Contribution to Road NOX** | 100.0% | 6.5% | 47.0% | | 0.0% | | 0.1% | | 30.2% | | 0.0% | | 7.1% | 8.8% | 0.3% | - | |
| **Average Across All Receptors With NO2 Concentration exceeding the AQS Annual Mean Objective** | | | | | | | | | | | | | | | | | |
| **NOX Concentration (µg/m3)** | 57.1 | 3.7 | | 26.9 | | 0.0 | | 0.0 | | 17.2 | | 0.0 | 4.0 | 5.0 | 0.2 | 24.6 | |
| **Percentage of Total NOX** | 69.9% | 4.5% | | 33.0% | | 0.0% | | 0.0% | | 21.1% | | 0.0% | 4.9% | 6.1% | 0.2% | 30.1% | |
| **Percentage Contribution to Road NOX** | 100.0% | 6.5% | | 47.1% | | 0.0% | | 0.1% | | 30.2% | | 0.0% | 7.1% | 8.8% | 0.3% | - | |
| **At The Receptor With the Maximum Road NOX Concentration (R9a)** | | | | | | | | | | | | | | | | | |
| **NOX Concentration (µg/m3)** | 60.3 | 3.9 | | 28.3 | | 0.0 | | 0.0 | | 17.9 | | 0.0 | 4.5 | 5.5 | 0.2 | 24.6 | |
| **Percentage of Total NOX** | 71.1% | 4.6% | | 33.4% | | 0.0% | | 0.0% | | 21.1% | | 0.0% | 5.3% | 6.5% | 0.2% | 28.9% | |
| **Percentage Contribution to Road NOX** | 100.0% | 6.4% | | 47.0% | | 0.0% | | 0.1% | | 29.7% | | 0.0% | 7.4% | 9.1% | 0.3% | - | |

Table 3.2 NO2 Source Apportionment Results

| **Results** | **All Vehicles** | **Car** | | | | | **LGV** | | | | | | **HGV** | **Bus and Coach** | **Motorcycle** | | **Background** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Petrol** | **Diesel** | | **EV/LPG** | | **Petrol** | | **Diesel** | | **EV/LPG** | |
| **Average across all modelled receptors** | | | | | | | | | | | | | | | | | |
| **NO2 Concentration (µg/m3)** | 23.5 | 1.5 | 11.0 | | 0.0 | | 0.0 | | 7.1 | | 0.0 | | 1.7 | 2.1 | 0.1 | 17.6 | |
| **Percentage of Total NO2** | 57.2% | 3.7% | 26.9% | | 0.0% | | 0.0% | | 17.3% | | 0.0% | | 4.1% | 5.0% | 0.2% | 42.8% | |
| **Percentage Contribution to Road NO2** | 100.0% | 6.5% | 47.0% | | 0.0% | | 0.1% | | 30.2% | | 0.0% | | 7.1% | 8.8% | 0.3% | - | |
| **Average Across All Receptors With NO2 Concentration exceeding the AQS Annual Mean Objective** | | | | | | | | | | | | | | | | | |
| **NO2 Concentration (µg/m3)** | 26.7 | 1.7 | | 12.6 | | 0.0 | | 0.0 | | 8.1 | | 0.0 | 1.9 | 2.3 | 0.1 | 17.6 | |
| **Percentage of Total NO2** | 60.3% | 3.9% | | 28.4% | | 0.0% | | 0.0% | | 18.2% | | 0.0% | 4.3% | 5.3% | 0.2% | 39.7% | |
| **Percentage Contribution to Road NO2** | 100.0% | 6.5% | | 47.1% | | 0.0% | | 0.1% | | 30.2% | | 0.0% | 7.1% | 8.8% | 0.3% | - | |
| **At The Receptor With the Maximum Road NO2 Concentration (R9a)** | | | | | | | | | | | | | | | | | |
| **NO2 Concentration (µg/m3)** | 28.0 | 1.8 | | 13.2 | | 0.0 | | 0.0 | | 8.3 | | 0.0 | 2.1 | 2.6 | 0.1 | 17.6 | |
| **Percentage of Total NO2** | 61.4% | 3.9% | | 28.9% | | 0.0% | | 0.0% | | 18.3% | | 0.0% | 4.5% | 5.6% | 0.2% | 38.6% | |
| **Percentage Contribution to Road NO2** | 100.0% | 6.4% | | 47.0% | | 0.0% | | 0.1% | | 29.7% | | 0.0% | 7.4% | 9.1% | 0.3% | - | |

The above Tables and Figure detail the source apportionment results for NOX and NO2 concentrations at modelled receptors for two scenarios:

* The average NOX and NO2 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 location where the maximum road NOX and NO2 concentrations have 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 average NOX concentration across all modelled receptors locations, the following observations were found:

* Road traffic accounts for 66.9% (49.5μg/m3) of the total average NOX, with background concentrations accounting for 33.1% (24.6μg/m3)
* Diesel cars account for 31.4% (23.3μg/m3) of the total NOX and 47.0% of all the road traffic.
* Diesel LGVs account for 20.2% (15.0μg/m3), the second largest contributor of the vehicle categories.

When considering average NO2 concentration across all modelled receptors locations, the following observations were found:

* Road traffic accounts for 57.2% (23.5μg/m3) of the total average NO2, with background concentrations accounting for 42.8% (17.6μg/m3)
* Diesel cars account for 26.9% (11.0μg/m3) of the total NO2 and 47.0% of all the road traffic.
* Diesel LGVs account for 17.3% (7.1μg/m3) of the total NO2, the second largest contributor of the vehicle categories.

## Required Reduction in Emissions

In line with Technical Guidance LAQM.TG22 Chapter 7, the reduction in emissions required in order to reduce concentrations to below the annual mean AQS objective for NO2 has been calculated. This is presented in Table 3.1 below. The exercise was completed using data from the worst-case receptor considered within the detailed modelling assessment (receptor R9a), where an NO2 concentration of 45.6 μg/m3 was predicted. This is intended to represent the maximum reduction in emission required across the Gloucester City Council area.

Table 3.3 Required Reduction in Emissions

|  |  |
| --- | --- |
| Metric | Concentration µg/m3 |
| Maximum Modelled NO2 Concentration (µg/m3) | 45.6 |
| Road NOX Concentration (µg/m3) | 58.7 |
| Required Road NOX Reduction (µg/m3) | 13.0 |
| Required Percentage Reduction | 22.1% |

## Key Priorities

Based on the conclusions of the above, the areas prioritised for action are detailed in the following sections.

### Priority 1: Transport

The main source of air pollution that has caused the declaration of the three AQMAs within Gloucester is associated with road transport emissions. Therefore, reducing transport emissions, within each AQMA and across Gloucester, through the measures contained within this AQAP is a key priority. The approach taken focuses on areas where Gloucester has direct control (e.g. parking, public transport and council procurement), or areas where measures can be implemented via a partnership with Gloucester County Council or others as appropriate.

### Priority 2: Planning and Infrastructure

Gloucester will work with developers and partner organisations to ensure the delivery of infrastructure, services and community facilities necessary to develop and maintain sustainable communities, not just in terms of air quality but all relevant environmental aspects. Initially this will also involve the production of Supplementary Planning Guidance for developers, used to inform the extent to which air quality must be considered and/or assessed at planning application stage.

### Priority 3: Behavioural Change and Campaigns

Encouraging the use of more sustainable forms of transport, instead of private car use, will be key to improving air quality across Gloucester. Behaviour change will be encouraged through several initiatives, such as those through schools, the promotion of sustainable/active travel and the implementation of a publicly available air quality information database.

# Development and Implementation of Gloucester City Council AQAP

## 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 41.

The response to our consultation stakeholder engagement will be given is given in Appendix A Response to Consultation.

Table 4.1 ‒ Consultation Undertaken

| Consultee | Consultation Undertaken |
| --- | --- |
| National Highways | No |
| All neighbouring local authorities | 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 | No |

## 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 Gloucester City 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 Environmental Protection, Planning Services, Climate Change and also representatives from Gloucestershire County Council in terms of Highways and external consultants from Bureau Veritas. 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 December 2020 and January 2021. A full list of attendees is given in Appendix B.

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.

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

# AQAP Measures

Throughout the development of the AQAP, a wide range of measures aimed at improving air quality within the Priory Road AQMA and the wider borough have been considered. LAQM.TG(22)[[20]](#footnote-21) states that AQAPs should be adapted to every local situation and most importantly are seen as part of an integrated package of measures, particularly in relation to linking with other key policy areas.

There were a number of measures that were considered, but not included within the AQAP. These measures, along with the reasons for non-inclusion within the AQAP are detailed within Appendix C.

Having undertaken this evaluation process, the resultant measures contained within this AQAP are considered the most effective, feasible and cost-effective to pursue in terms of potential air quality improvements within the AQMA and the wider borough. Given that road traffic has been identified as the principal source of NOX emissions, and therefore NO2 concentrations, within the AQMA, the measures presented below focus on the promotion of low/zero emission transport, traffic management improvements and improved community awareness.

Table 51 shows the Gloucester City Council AQAP measures. It contains:

* a list of the actions that form part of the plan;
* the departments/organisations responsible for delivering this action;
* estimated cost of implementing each action;
* expected benefit in terms of pollutant emission and/or concentration reduction;
* the timescale for implementation; and
* how progress will be monitored.

**NB:** Please see future Annual Status Reports (ASRs) for regular annual updates on implementation of these measures

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 | Consider the revocation of an AQMA should be considered following three consecutive years of compliance | Other | Other | 2025 | 2027 | Gloucester City Council | GCC | No | Unknown | TBC | Ongoing | 10% below the relevant objective at the point of exposure | Continued upload of data | Ongoing | The City Council should be confident that the years counted towards full compliance are representative of typical conditions and are in a position to assure local communities that achievement with objectives will be maintained after revocation as required through Environment Act 1995, as amended by Environment Act 2021. |
| 2 | Continue to explore improvements within all AQMAs; highways infrastructure based. Feasibility to be completed in terms of options available. | Transport Planning and Infrastructure | Other | TBC | TBC | City Council / County Council | TBC | No | Unknown | TBC | Ongoing |  | Less congestion and reduction in NO2 concentration in AQMAs. | Ongoing | Possible to present a number of options to the community to gain feedback. Improvements based upon; cycle lanes, one-way system, lane closure. |
| 3 | Development of cycle lanes, both temporary and permanent. | Transport Planning and Infrastructure | Cycle network | Completed | Completed/ TBC | City Council / County Council/ Cheltenham BC | County Council | No | Unknown | £100k - £500k | Implementation | Moderate | Number of users. | Completed for London Road/ Cycle Spine ongoing / TBC | Using the London Road example identify additional areas where lane closure may be feasible. Running several trials to check feasibility and uptake. A permanent cycle route from Gloucester to Cheltenham is under construction. |
| 4 | Collaborating with bus operators (Stagecoach). | Transport Planning and Infrastructure | Other | Ongoing | Ongoing | City Council / County Council | Ongoing | NO | Ongoing | £100k - £500k | Implementation | Moderate | Engagement with bus operators. | Ongoing | 1) Upgrades to fleet; vehicle replacement and retrofitting.  2) Routing of buses; efficiency of service and least polluting vehicles in high NO2 concentration areas. Also the option to apply to refuse fleet if the council believe this to be a viable option. |
| 5 | Develop and enforce a City wide anti-idling campaign. | Traffic Management | Anti-idling enforcement | TBC | TBC | City Council / County Council | TBC | NO | TBC | £10k - 50k | Planning | Low | Increased awareness. | Ongoing | Reducing vehicle idling at identified points within the city; taxi ranks, train station, bus stops and outside schools. |
| 6 | Implementation of a fleet recognition scheme. | Vehicle Fleet Efficiency | Fleet efficiency and recognition schemes | TBC | TBC | City Council / County Council | TBC | NO | TBC | < £10k | Planning | Low | Number of users. | Ongoing | A scheme such as ECO Stars can be aimed at bus, coach, HGVs and taxis within the City. A scheme should raise awareness among operators of commercial vehicles of the important role they can play in helping to improve local air quality, through improved fleet environmental performance. |
| 7 | Procurement of low emission vehicles | Promoting Low Emission Transport | Company Vehicle Procurement - Prioritising uptake of low emission vehicles | Complete | Ongoing | City Council / County Council | In progress | NO | In progress | £100k - £500k | Implementation | Moderate | Number of users. | Ongoing | Inclusive of a salary sacrifice scheme to promote LEV take-up within council staff - tax breaks etc. In progress- Tusker soon to be launched. |
| 8 | Scooter/cycle rental. | Promoting Travel Alternatives | Promotion of cycling | Continued | Ongoing | City Council / County Council / Cheltenham Borough Council | Continued | NO | Continued | £50k - £100k | Implementation | Moderate | Number of users. | Ongoing | Trial of e-scooters and E cargo bikes currently being undertaken within Gloucester and Cheltenham. Liaise with county upon results of trial and feasibility to develop into a permanent travel option. Understood that trial went well and there is the possibility of transferring to a cycle scheme. |
| 9 | Provide supplementary planning guidance to developers | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | TBC | Ongoing | City Council / County Council | TBC | NO | TBC | < £10k | Planning | Low | Engagement between EHOs and developers. | Ongoing | Guidance to be refined from discussions around requirement for baseline monitoring / |
| 10 | Installation of electric charging points within Council car parks throughout the city. | Promoting Low Emission Transport | Other | Under Consideration | TBC | City Council / County Council / Office for Zero Emission Vehicles | TBC | NO | TBC | £100k - £500k | Planning | Moderate | Number of charging points. | Ongoing | Draft policy in Local Plan - every household where it is feasible. Expand upon this to install within existing car parks, subsidise EV parking. |
| 11 | Travel planning / Behavioural Change Campaigns | Promoting Travel Alternatives | Intensive active travel campaign & infrastructure | Ongoing | Open Ended | City Council / County Council | TBC | NO | TBC | < £10k | Planning | Low | Number of plans implemented. | Ongoing | The measures that have been discussed within 4, 5 and 9 should be moulded into a suite of works that can be developed and implemented over a set timeline. Would include Travel Plans / Journey Planning Promotion of sustainable / active travel Cycle to work schemes Family cycling schemes Working from home. Travel plans can be tailored to: Schools Job seekers Businesses Specific to geographical areas |
| 12 | Public Awareness / Information Accessibility | Public Information | Via the Internet/ social Media | TBC | TBC | City Council / County Council | TBC | NO | TBC | < £10k | Planning | NA | Increased awareness. | Ongoing | Dovetailed with the measure above, the amount and the quality of information available to the general public should be increased. Emphasis on information on sustainable travel options. Air quality information database - central landing website/ social media posts that link to relevant information. |
| 13 | Schools Initiatives | Promoting Travel Alternatives | School Travel Plans | TBC | TBC | City Council / County Council | TBC | NO | TBC | < £10k | Planning | NA | Number of schools involved. | Ongoing | Specifically related to the schools within Gloucester. Again, a list of sub-measures should be detailed that can be developed and implemented over a set timeline. To consider: Anti-idling School streets / street closures Ongoing educational events Cycle and walking route planning |
| 14 | Knowledge sharing with other local councils to build capacity in the wider area |  |  | Ongoing | Ongoing | District councils/ County council | n/a | No | n/a | n/a | Planning | n/a |  | Ongoing |  |
| 15 | Review the Borough's Smoke Control Area | Other | Other | 2024 | 2025 | GCC/ Defra | GCC/ Defra | Yes | Unknown | £10 -£20k | Planning | 0.5µg/m³ | Amendment to SCA |  |  |
| 16 | Adopt a Gloucester Air Quality Strategy. Consider inclusion from AQAP consultation | Policy guidance and Development Control | Low emission Strategy | 2025 | 2027 | City Council/ County Council/ Local residents | GCC | No | Unknown | £10 -£20k | Planning | n/a | ASR Process |  |  |

## Timescales of the AQAP Measures

Several of the measures set out in Table 5.1 are at the planning stage or require further funding but given the concentrations in Gloucester have already been below the annual mean NO2 air quality objective for two years, it is expected that the AQMA will be revoked in the coming years. Measures including cycle lanes have already been completed and bus upgrades and anti-idling campaigns are in progress.

The Gloucester City Council 2025 Air Quality Annual Status Report will continue to detail the progression of these measures and review the requirement for the AQMA.

## Air Quality Partners

Gloucester City Council have collaborated and will continue to work with Gloucestershire County Council to improve air quality within Gloucester.

## Measures to Maintain Safe Air Quality

As shown by the trend in monitoring data, annual mean NO2 concentrations were below the annual mean air quality objective in 2023. The measures regarding the uptake of more sustainable modes of transport and the general expected improvements in vehicle euro fleets and more electric vehicles expected in the general fleet, it is expected that the Air Quality Objective for NO2 will continue to be achieved.

It should also be noted that following compliance of the Air Quality Objective for annual mean NO2 then Gloucester City Council will consider developing an Air Quality Strategy detailing the ongoing measures to continue to keep NO2 concentrations below the air quality objective.

# Quantification of Measures

## Assumptions

### - Measure 3 Quantification – Upgrade to Fleet Buses

To improve emissions within the AQMA and within Gloucester city centre it is proposed to upgrade the fleet to Euro 6 buses. To quantify the reduction in emissions within the AQMA with this measure in place, traffic data obtained from the 2020 study was utilised within the Emissions Factor Toolkit (EFT) v12.1. The original fleet composition was run for 2019, the baseline year of the assessment and then the bus fleet was converted to 100% Euro 6 buses as a best-case scenario. Within the AQMA a NO2 annual mean concentration decrease of 5% was obtained for 2019. This is considered indicative of a decrease that would be observed with up-to-date traffic data.

### – Qualitative Quantification

The remaining measures within Table 5.1 are considered to be soft measures which cannot be quantified quantitatively. These measures were therefore qualitatively quantified within the cost benefit analysis.

## Cost Benefit Analysis of Measures

### Methodology

Using the above assumptions around the quantitative pollution reduction and assumed costs, each measure was given a score as set out below. The methodology used is from the LAQM guidance on determining the impact of air quality measures[[21]](#footnote-22). Table 6.1 and Table 6.2, show the cost and estimated reduction brackets within the scoring range.

Table 6.1 – Cost Score

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

Table 6.2 – Impact Score

| **Estimated Reduction in Pollutant Concentrations** | **Score** |
| --- | --- |
| >0.5µg/m³ | 1 |
| 0.5-1µg/m³ | 2 |
| 1-2µg/m³ | 3 |
| 2-3µg/m³ | 4 |
| 3-4µg/m³ | 5 |
| 4-5µg/m³ | 6 |
| >5µg/m³ | 7 |

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 6.3 – Feasibility Scores

| **Feasibility Score** | **Score** |
| --- | --- |
| Measure has already been started and just requires progressing | 7 |
| Very easy to implement, and political support, sufficient resources | 6 |
| Relatively easy to implement, resources available | 5 |
| Possible to implement but may require some learning/campaigning, moderately time intensive | 4 |
| Challenging but still feasible, may require additional support and resources | 3 |
| Difficult to implement, no political appetite, time and resource intensive | 2 |
| Very difficult to implement, no political appetite, time and resource intensive | 1 |

### 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 below. With the feasibility weighting meaning that measures which are the easiest to progress are scored higher, these are prioritised.

*Cost Effectiveness Score = Cost Score x Impact Score*

*Prioritisation Score = Cost Effectiveness Score x Feasibility Score*

Table 6. – Cost Benefit Analysis of Measures

| **Measure No.** | **Measure** | **Approximate Cost (£)** | **Cost Score** | **Air Quality Effect Score** | **Impact Score** | **Cost Effectiveness Score** | **Feasibility Score** | **Prioritisation Score** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Consider the revocation of an AQMA should be considered following three consecutive years of compliance | £10k - 50k | 6 | <0.5 µg/m³ | 1 | 6 | 5 | 30 |
| 2 | Continue to explore improvements within all AQMAs; highways infrastructure based. Feasibility to be completed in terms of options available. | £100k - £500k | 4 | <0.5 µg/m³ | 1 | 4 | 3 | 12 |
| 3 | Development of cycle lanes, both temporary and permanent. | £100k - £500k | 4 | <0.5 µg/m³ | 1 | 4 | 7 | 28 |
| 4 | Collaborating with bus operators (Stagecoach). | £100k - £500k | 4 | 2-3 µg/m³ | 4 | 16 | 3 | 48 |
| 5 | Develop and enforce a City wide anti-idling campaign. | £10k - 50k | 6 | <0.5 µg/m³ | 1 | 6 | 3 | 18 |
| 6 | Implementation of a fleet recognition scheme. | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 3 | 21 |
| 7 | Procurement of low emission vehicles | £100k - £500k | 4 | <0.5 µg/m³ | 1 | 4 | 5 | 20 |
| 8 | Scooter/cycle rental. | £50k - £100k | 5 | <0.5 µg/m³ | 1 | 5 | 5 | 25 |
| 9 | Provide supplementary planning guidance to developers | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 2 | 14 |
| 10 | Installation of electric charging points within Council car parks throughout the city. | £100k - £500k | 4 | <0.5 µg/m³ | 1 | 4 | 3 | 12 |
| 11 | Travel planning / Behavioural Change Campaigns | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 3 | 21 |
| 12 | Public Awareness / Information Accessibility | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 3 | 21 |
| 13 | Schools Initiatives | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 3 | 21 |
| 14 | Knowledge sharing with other local councils to build capacity in the wider area | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 7 | 49 |
| 15 | Review the Borough's Smoke Control Area | £10k - £50k | 6 | <0.5 µg/m³ | 1 | 6 | 5 | 30 |
| 16 | Adopt a Gloucester Air Quality Strategy. Consider inclusion from AQAP consultation | < £10k | 7 | <0.5 µg/m³ | 1 | 7 | 4 | 28 |

## Year of Objective Compliance

Gloucester City Council aims that the implementation of the outlined measures will result in the relevant objective being attained by 2024 within the Priory Road AQMA given the trend in diffusion tube monitoring data in the previous two years. The monitoring data for 2024 will be reviewed during the 2025 ASR process and the AQMA revoked if suitable in 2025.

Appendix A: Response to Consultation

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

| Consultee | Category | Response |
| --- | --- | --- |
| <Insert consultee e.g. Chamber of Commerce> | <Insert category e.g. Business> | <Insert text e.g. Disagree with plan to remove parking on High Street in favour of buses and cycles; consider it will harm business of members> |
|  |  |  |

Table A.2 - Members of the Steering Group

|  |  |
| --- | --- |
| Name | Position Held |
| Gupti Gosine | Community Wellbeing Manager – Gloucester City Council |
| Julie Turner | Community Wellbeing Officer (Environmental Health) – Gloucester City Council |
| Yvonne Welsh | Environmental Health Officer – Gloucester City Council |
| Dawn Fearn | Senior Environmental Officer – Gloucester City Council |
| Philip Cameron | Network and Traffic Manager – Gloucestershire County Council |
| Jon Burke | City Climate Change & Environment Manager – Gloucester City Council |
| David Ingleby | Senior Planning Officer – Gloucester City Council |
| Sue Weaver | Head of Commissioning; Health Improvement); Gloucestershire County Council |

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) |
| Traffic Management | Vehicle restrictions to be enforced on the B4073 | The Barton Street AQMA which the B4073 is within is being revoked. |

Appendix C: AQMA Review – Summary of Detailed Modelling Study Undertaken 2020

A dispersion modelling assessment was completed, whereby NO2 concentrations were predicted across all relevant areas within the city at both specific receptor locations, and across a number of gridded areas to allow the production of concentration isopleths. This has been used to supplement local monitoring data to provide a clear picture of pollutant conditions within the city.

Following the completion of the analysis of both monitoring data and modelled concentrations across all of the assessed area a number of recommendations were made in terms of the AQMAs within Gloucester:

* Barton Street AQMA – the AQMA should remain in force with the current boundary;
* Priory Road AQMA – should remain in force with its current boundary, due to exceedances demonstrated in both the monitoring and modelling;
* Painswick Road AQMA - it is recommended that the AQMA remains in force with the current boundary and more monitoring data should be collected in order to ensure that the exceedance shown at one monitoring site in 2019 was a ‘one-off’ before considering revocation; and
* Outside the current AQMAs – monitoring and modelling shows compliance. However, it should be noted that high concentrations, in the range 36 – 40 µg/m3, have been demonstrated in the modelling to the west of the current Priory Road AQMA. It is recommended that the Council undertaken further monitoring around this area to ensure there are no exceedances at points of relevant exposure.

A map of the AQMAs within Gloucester is provided in Figure A.1, whilst Figure A.2 presents a visualisation of the modelled concentrations predicted by the assessment.

Source apportionment results are shown in Figure A.3 – A.5.

Figure A.1 - AQMAs in Gloucester

A map of a city

Description automatically generated

Figure A.2 - Modelled Receptor NO2 Concentrations

A map of a city

Description automatically generated

Figure A.3 - NO2 Source Apportionment Results: AQMA 1

A pie chart with different colored sections

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Figure A.4 - NO2 Source Apportionment Results: AQMA 2

A pie chart with different colored circles

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Figure A.5 - NO2 Source Apportionment Results: AQMA 3

A close-up of a pie chart

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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 |
| GCC | Gloucester City Council |
| GCP | Gloucester City Plan |
| JCS | Joint Core Strategy |
| LAQM | Local Air Quality Management |
| LCWIP | Local Cycling and Walking Infrastructure Plan |
| NO2 | Nitrogen Dioxide |
| NOX | Nitrogen Oxides |
| PM10 | Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less |
| PM2.5 | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |

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