Gloucester City Council
Air Quality Action Plan
Draft for Consultation

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

July 2024

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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 framework. It outlines the action we will take to improve air quality in Gloucester between 2024 and 2028.

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[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3]. Gloucester City Council is committed to reducing the exposure of people in Gloucester 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.

[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

- 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.
- Behavioural change and campaigns – including schools initiatives, the promotion of sustainable/active travel and an air quality information database.

The overarching aim of this plan is to facilitate a behavioural shift within the population to promote more sustainable, and less polluting methods of transport within the city and its surrounds. In those areas where vehicular emissions remain the largest contributor to air pollution, measures will be introduced to improve sustainable infrastructure, and supplementary planning guidance will be published to guide developers. A full list of key priorities for Gloucester City Council is provided in Section 3.5.

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:

- **Community Wellbeing Team**
- **Climate Change Team**
- **Highways**
- **Public Health**

This AQAP has been approved by:

(TBC) Gloucester City Council Portfolio Holder/Cabinet

This AQAP will undergo an appraisal of progress against measures on an annual basis, with 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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1 Introduction

This Air Quality Action Plan (AQAP) outlines the actions that Gloucester City 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 the city of Gloucester.

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 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This AQAP 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 Annual Status Report (ASR).

2 Summary of Current Air Quality in Gloucester City Council

2.1 Air Quality Monitoring Data

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 AQS annual mean objective for nitrogen dioxide (NO_2) of 40 µg/m^3. The exceedances are most likely due to emissions from road traffic along the city's road network. As such, existing monitoring within Gloucester is focussed within known 'hotspots' along the roadside.

During 2020, NO_2 was monitored at 18 locations using passive diffusion tubes, comprising 17 roadside sites and one urban background site. There is no automatic monitoring undertaken within the jurisdiction of Gloucester City Council.

Focussing on the monitoring undertaken within each of the AQMAs, Table 2.1 provides the annual mean NO_2 concentrations for the monitoring sites located within the declared AQMAs, of which there are 12 sites.

Exceedances of the 40 µg/m^3 AQS annual mean objective for NO_2 are highlighted in bold. Although there were no exceedances of annual mean NO_2 in 2020, this is likely as a result of changes in traffic patterns as a result of the COVID-19 pandemic and further data will need to be collected to investigate whether concentrations remain below the annual mean objective in the long-term.

Table 2.1 – Annual Mean Monitoring Results 2018 - 2020

Site ID	Relevant AQMA	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Concentration 2018 (µg/m^3)	NO_2 Concentration 2019 (µg/m^3)	NO_2 Concentration 2020 (µg/m^3)
5	Painswick Road	384558	216946	29.6	27.3	21.6
7	Painswick Road	384490	217027	29.8	31.9	23.8
8	Painswick Road	384509	216998	33.7	34.2	27.9
12	Barton Street	384000	217863	36.8	36.2	27.8
13	Barton Street	383717	218094	37.6	37.2	31.7
14	Barton Street	383726	218074	**42.4**	**43.9**	31.5
15	Barton Street	383989	217857	38.4	39.7	30.1
16	Barton Street	384081	217725	32.1	31.2	21.6
17	Barton Street	384175	217501	32.7	35.5	26.1
23	Priory Road	382898	219029	**46.3**	**40.5**	29.5
24	Priory Road	382921	219034	**47.4**	**43.0**	32.5
25	Priory Road	382950	219040	**47.1**	**43.2**	31.9

In addition to future years monitoring results, any changes made to the existing monitoring network within Gloucester will be detailed and justified within subsequent ASRs. The monitoring network serves as an ongoing indicator for changing NO_2 trends and will be essential for the assessment of 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.

2.2 Detailed Modelling Study

In 2020, the Council commissioned a Detailed Modelling Study to review the city's current AQMAs, a summary of which is provided in Appendix A. This used an assessment year of 2019, as the most recent full year with available data at the time of the assessment.

Since the predominant source of NO_2 emissions within Gloucester are from road traffic travelling on the city's road network, particularly within the current AQMAs, a detailed modelling assessment of emissions from road traffic was undertaken. The aim was to review the status of the AQMAs, in relation to their appropriateness of location and spatial extent.

This study concluded that, due to emissions from road traffic, principally those from diesel cars, LGVs and buses/coaches, all the existing AQMAs should remain in place due to high concentrations of NO_2 in these areas.

The Detailed Modelling Assessment considered pollutant emissions from the road network across the Gloucester city area to ascertain spatial NO_2 concentrations in order to identify areas that are above, or within 10%, of the AQS annual mean objective. The annual mean NO_2 concentration was predicted at 187 discrete receptor locations, as well as across a number of gridded receptor points, to enable the production of pollutant contours.

The NO_2 annual mean AQS objective of 40 µg/m^3 was observed to be exceeded at a total of 11 of the 187 discrete receptor locations (~6%), with a further two locations within 10% of the objective. Outside of the current AQMAs, no discrete receptors were assessed to be in exceedance. As such, it was recommended that the existing AQMA boundaries were appropriate and no new AQMAs needed to be declared.

Please refer to the most recent ASR from Gloucester City Council for more details on air quality across the city, available on the Council website[4].

[4] https://www.gloucester.gov.uk/environment-waste-recycling/pollution/air-quality/

3 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 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 (NO_x) vehicle contributors to be identified. NO_x species are predominantly emitted into the atmosphere in the form of nitric oxide (NO) which is then converted to nitrogen dioxide (NO_2) through chemical processes in the atmosphere. Under most atmospheric conditions, the dominant pathway for NO_2 formation is via the reaction of NO with ozone (O_3).

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.

3.1 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[5]. 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[6].

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

[5] 1 Environmental equity, air quality, socioeconomic status and respiratory health, 2010; Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[6] https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution

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 NO_2, 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 Directions of Public Health[7]" 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 NO_2, there is an increasing focus on fine particulate matter. Specifically, $PM_{2.5}$ is a pollutant of concern, meaning particulate matter which is 2.5 microns or less in diameter. The Public Health Outcomes Framework data tool compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2018 fraction of mortality attributable to $PM_{2.5}$ pollution across England is 5.2%, and the fraction within Gloucester City Council is below the national average of 4.9%, however this is higher than the South West region average of 4.4%.

It should be noted that this figure only accounts for one pollutant ($PM_{2.5}$) for which

[7] https://laqm.defra.gov.uk/mwg-internal/de5fs23hu73ds/progress?id=J-TIiE-srpwXrbZr9rPkC5cmncdLvHWZY0qt_Gytj0E,

stronger scientific evidence on links with mortality exist, and not NO_2, 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[8] 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
- 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[9]. 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.

3.2 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

[8] https://www.gloucestershire.gov.uk/media/2091564/gcc_2596-joint-health-and-wellbeing-strategy_dev8.pdf
[9] https://glostext.gloucestershire.gov.uk/documents/s52324/Gloucestershire%20Air%20Quality%20and%20Health%20Strategy%20v.%204.pdf

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.

3.2.1 Clean Air Strategy 2019

The Clean Air Strategy[10] 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[11].
- 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 NO_2 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.

[10] Department for Environment, Food and Rural Affairs (2019), Clean Air Strategy
[11] https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030

- Permitting approaches for the reduction of emissions from non-road mobile machinery, especially in urban areas.

3.2.2 UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations

Published in July 2017, the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)[12] is the UK governments plan for bringing concentrations of NO_2 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 NO_2 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 NO_2 concentrations on road links identified by the national Pollutant Climate Mapping (PCM) model as being in exceedance of the NO_2 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 NO_x emissions from vehicles, and therefore lower NO_2 concentrations.

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

The Joint Core Strategy (JCS)[13] 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*

[12] Department for Environment, Food and Rural Affairs, Department for Transport (2017), UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)
[13] https://www.jointcorestrategy.org/

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***

3.2.4 Gloucester City Plan

Together with the JCS, the Gloucester City Plan (GCP)[14] 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.

[14] https://www.gloucester.gov.uk/planning-development/planning-policy/gloucester-city-plan/

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.

3.2.1 Gloucestershire Air Quality and Health Strategy

The Gloucestershire Air Quality and Health Strategy (see section 3.1) 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
- Cleaner fleets and public transport

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

3.2.2 '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 (CO_2) and other greenhouse gases, whereas the focus of this AQAP is on reducing NO_2 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 NO_2 emissions.

3.2.3 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[15]. 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.

[15] https://www.gloucestershire.gov.uk/media/2095888/cycling-and-walking-infrastructure-plan-final-20200828.pdf

4 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.

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

The percentage source contributions within each AQMA were as follows:

- Barton Street AQMA: road traffic accounts for 39% of the total NO_2 concentration. Of the total road NO_2, Diesel Cars account for the greatest contribution (40%) of any of the vehicle types, followed by Diesel LGVs (23%) and Bus/Coach (17.3%);
- Priory Road AQMA: road traffic accounts for 57.2% of the total NO_2 concentration. Of the total road NO_2, Diesel Cars account for the greatest contribution (47%) of any of the vehicle type, followed by Diesel LGVs (30%) and Bus/Coach (9%); and
- Painswick Road AQMA: road traffic accounts for 44.8% of the total NO_2 concentration. Of the total road NO_2, Diesel Cars account for the greatest contribution (43%) of any of the vehicle type, followed by Diesel LGVs (27%) and Bus/Coach (13%).

4.1 Required Reduction in Emissions

In line with Technical Guidance LAQM.TG16 Chapter 7, the reduction in emissions required in order to reduce concentrations to below the annual mean AQS objective for NO_2 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 NO_2 concentration of 45.6 $\mu g/m^3$ was predicted. This is intended to represent the maximum reduction in emission required across the Gloucester City Council area.

Table 4.1 – Emission Reduction Requirement

AQMA	Required NO_2 Concentration Reduction [worst case]	Required Reduction in Road-Related NO_x Emissions [worst case]	Worst Case Monitoring/Modelled Location
Priory Road	13 µg/m^3	22%	R9a (x382946, y219041) Residential property within Priory Road AQMA.

4.2 Key Priorities

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

4.2.1 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.

4.2.2 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.

4.2.3 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.

5 Development and Implementation of Gloucester City Council AQAP

5.1 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 requires local authorities to consult the bodies listed in Table 5.1. In addition, we have undertaken the following stakeholder engagement:

- TBC

The response to our consultation stakeholder engagement is given in Appendix B.

Table 5.1 – Consultation Undertaken <TBC>

Yes/No	Consultee
	the Secretary of State
	the Environment Agency
	the highways authority
	all neighbouring local authorities
	other public authorities as appropriate, such as Public Health officials
	bodies representing local business interests and other organisations as appropriate

5.2 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 NO_2 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.

6 AQAP Measures

Throughout the development of the AQAP, a wide range of measures aimed at improving air quality within the new AQMA and the wider borough have been considered. LAQM.TG(16)[7] 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 NO_x emissions, and therefore NO_2 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 6.1 shows the AQAP measures for Gloucester City Council. 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

The progress of each measure is to be documented annually within the future ASRs.

Table 6.1 – Air Quality Action Plan Measures

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Consider the revocation of an AQMA should be considered following three consecutive years of compliance	Other	Other	Gloucester City Council	TBC	After 5yrs of continued Compliance	10% below the relevant objective at the point of exposure	yes	Under review	2027	The City Council should be confident that the years counted towards full compliance are representative of typical conditions and therefore, 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	City Council / County Council	TBC	TBC	Less congestion and reduction in NO_2 concentration in AQMAs.	-	Ongoing	TBC	Possible to present a number of options to the community to gain feedback. Improvements based upon; cycle lanes, one-way system, lane closure.
3	Vehicle restrictions to be enforced on the B4073	Traffic Management	Other	City Council / County Council	TBC	TBC	Reduction in NO_2 concentration along Painswick Road.	-	Ongoing	TBC	Possibility of restricting the size of vehicles travelling down Barton Street. If this is used as a cut through rather than travelling on Metz Way it would stop larger, more polluting vehicles travelling past the AQMA.
4	Development of cycle lanes, both temporary and permanent.	Transport Planning and Infrastructure	Cycle network	City Council / County Council/ Cheltenham BC	Completed	Completed	Number of users.	-	Ongoing	Completed/ TBC	Using the London road example identify additional areas where lane closure may be feasible. Running a number of trials to check feasibility and uptake. A permentant cycle route from Gloucester to Cheltenham is under construction.
5	Collaborating with bus operators (Stagecoach).	Transport Planning and Infrastructure	Other	City Council / County Council	Ongoing	Ongoing	Engagement with bus operators.	-	Ongoing	Ongoing	1) Upgrades to fleet; vehicle replacement and retrofitting. 2) Routing of buses; efficiency of service and least polluting vehicles in high NO_2 concentration areas. Also the option to apply to refuse fleet if the council believe

											this to be a viable option.
6	Develop and enforce a City wide anti-idling campaign.	Traffic Management	Anti-idling enforcement	City Council / County Council	TBC	TBC	Increased awareness.	-	Ongoing	TBC	Reducing vehicle idling at identified points within the city; taxi ranks, train station, bus stops and outside schools.
7	Implementation of a fleet recognition scheme.	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	City Council / County Council	TBC	TBC	Number of users.	-	Ongoing	TBC	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.
8	Procurement of low emission vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	City Council / County Council	On Hold	On Hold	Number of users.	-	Ongoing	On Hold	Inclusive of a salary sacrifice scheme to promote LEV take-up within council staff - tax breaks etc.
9	Scooter/cycle rental.	Promoting Travel Alternatives	Promotion of cycling	City Council / County Council / Cheltenham Borough Council	Continued	Continued	Number of users.	-	Ongoing	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.
10	Provide supplementary planning guidance to developers.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	City Council / County Council	TBC	TBC	Engagement between EHOs and developers.	-	Ongoing	Ongoing	Guidance to be refined from discussions around requirement for baseline monitoring / modelling, etc. Appropriate planning guidance from County Council fed down to City Council requirements.
11	Installation of electric charging points within Council car parks throughout the city.	Promoting Low Emission Transport	Other	City Council / County Council / Office for Zero Emission Vehicles	Under Consideration	TBC	Number of charging points.	-	Ongoing	TBC	Draft policy in Local Plan - every household where it is feasible. Expand upon this to install within existing car parks, subsidise EV parking.
12	Travel planning / Behavioural Change Campaigns	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	City Council / County Council	Ongoing	TBC	Number of plans implemented.	-	Ongoing	Open Ended	The measures that have been discussed within 3 and 4 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

13	Public Awareness / Information Accessibility	Public Information	Via the Internet	City Council / County Council	TBC	TBC	Increased awareness.	-	Ongoing	TBC	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 that links to relevant information.
14	Schools Initiatives	Promoting Travel Alternatives	School Travel Plans	City Council / County Council	TBC	TBC	Number of schools involved.	-	Ongoing	TBC	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

Appendix A: AQMA Review – Summary of Detailed Modelling Study

A dispersion modelling assessment was completed, whereby NO_2 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/m^3, 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

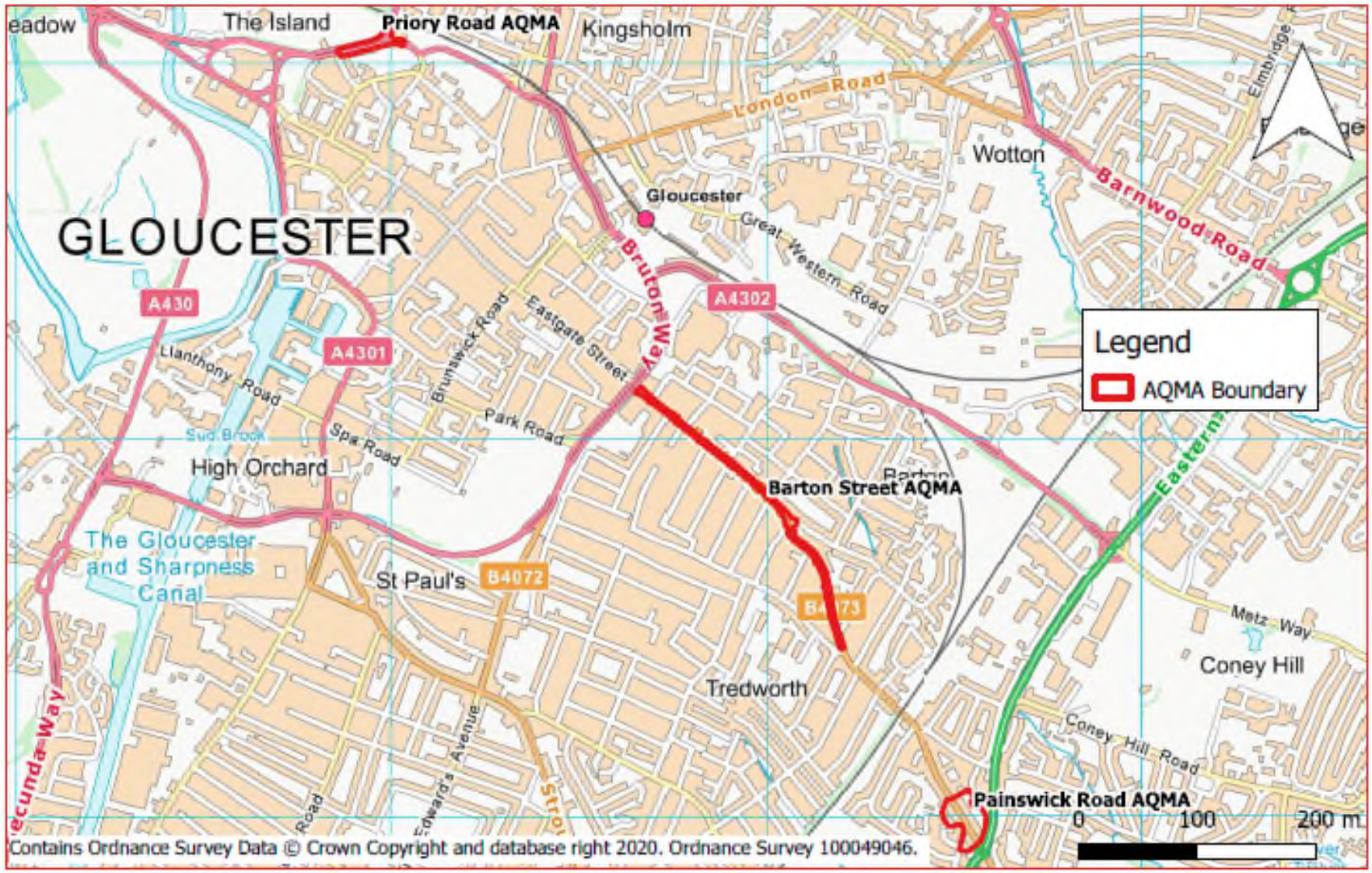


Figure A.2 - Modelled Receptor NO_2 Concentrations

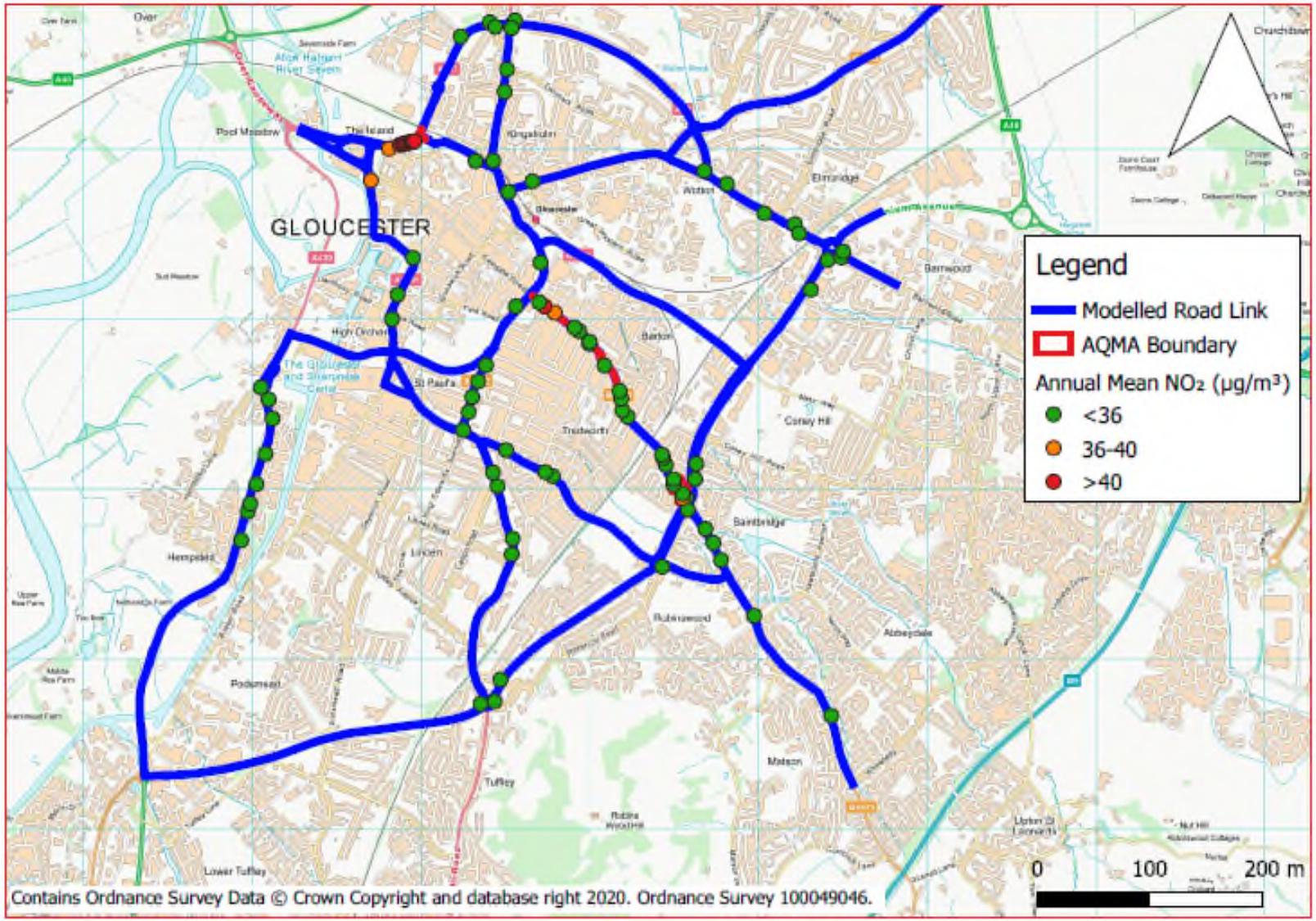


Figure A.3 - NO_2 Source Apportionment Results: AQMA 1

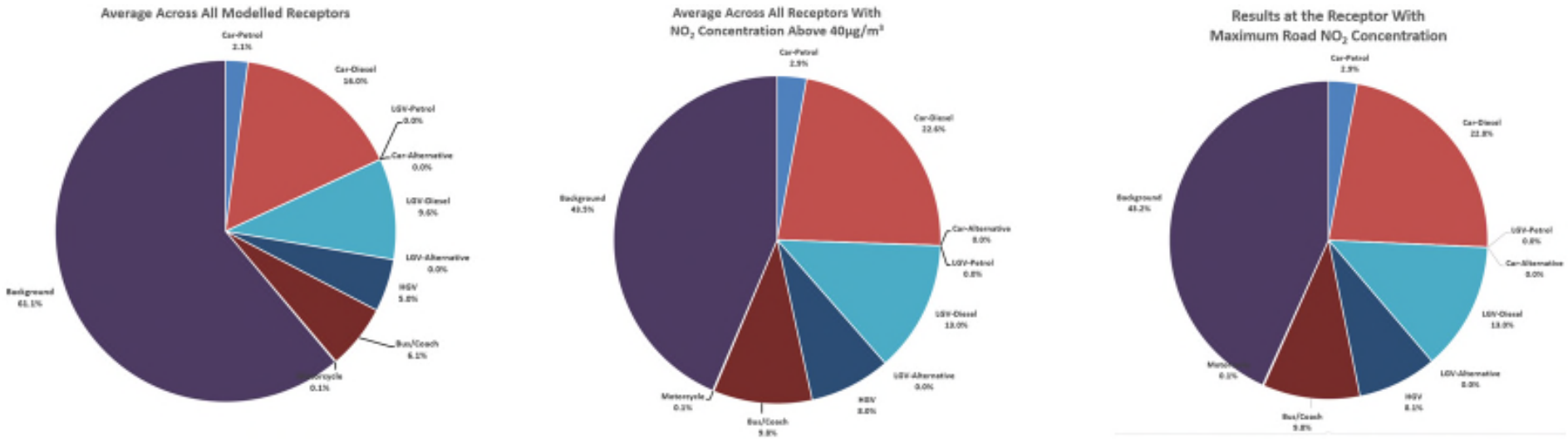


Figure A.4 - NO_2 Source Apportionment Results: AQMA 2

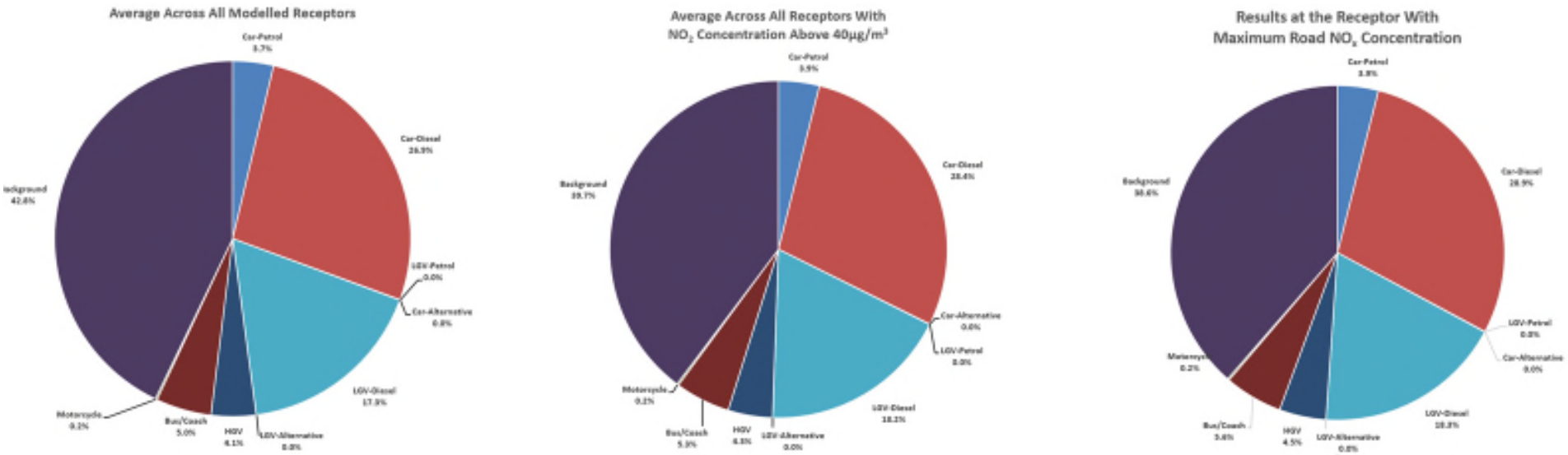
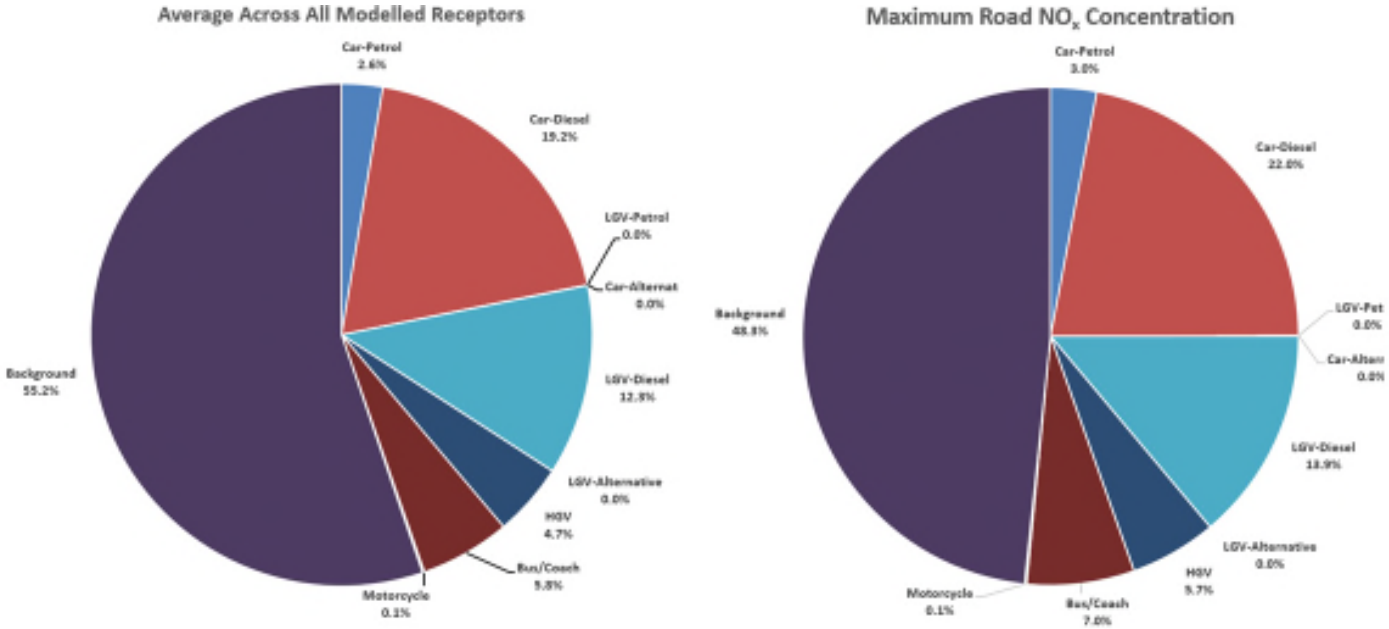


Figure A.5 - NO_2 Source Apportionment Results: AQMA 3



Appendix B: Response to Consultation

Table B.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP <TBC> pending

Consultee	Category	Response
e.g. Chamber of Commerce	Business	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 B.2 – Members of 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
Sue Weaver	Head of Commissioning; Health Improvement); Gloucestershire County Council
David Ingleby	Senior Planning Officer – Gloucester City Council

Appendix C: Reasons for Not Pursuing Action Plan Measures

Table C.1 – Action Plan Measures Not Pursued and the Reasons for that Decision <TBC>

Action category	Action description	Reason action is not being pursued (including Stakeholder views)

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
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10 µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5 µm or less