



Department
for Environment
Food & Rural Affairs



Department
for Transport

Air Quality Plan for tackling roadside nitrogen dioxide concentrations in Bristol Urban Area (UK0009)

July 2017



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1 Introduction

1.1 This document

This document is the Bristol Urban Area agglomeration zone (UK0009) updated air quality plan for tackling roadside nitrogen dioxide (NO₂) concentrations. This is an update to the air quality plan published in December 2015 (<https://www.gov.uk/government/collections/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2015>).

This plan presents the following information:

- General information regarding the Bristol Urban Area agglomeration zone
- Details of NO₂ exceedance situation within the Bristol Urban Area agglomeration zone
- Details of local air quality measures that have been implemented, will be implemented or are being considered for implementation in this agglomeration zone

This air quality plan for the Bristol Urban Area agglomeration zone should be read in conjunction with the separate UK Air Quality Plan for tackling roadside nitrogen dioxide concentrations (hereafter referred to as the overview document) which sets out, amongst other things, the authorities responsible for delivering air quality improvements and the list of UK and national measures that are applied in some or all UK zones. The measures presented in this zone plan, and the accompanying UK overview document show how the UK will ensure that compliance with the NO₂ limit values is achieved in the shortest possible time.

This plan should also be read in conjunction with the supporting UK Technical Report which presents information on assessment methods, input data and emissions inventories used in the analysis presented in this plan.

1.2 Context

Two NO₂ limit values for the protection of human health have been set in the Air Quality Directive (2008/50/EC). These are:

- The annual mean limit value: an annual mean concentration of no more than 40 $\mu\text{g}\text{m}^{-3}$
- The hourly limit value: no more than 18 exceedances of 200 $\mu\text{g}\text{m}^{-3}$ in a calendar year

The Air Quality Directive stipulates that compliance with the NO₂ limit values will be achieved by 01/01/2010.

1.3 Zone status

The assessment undertaken for the Bristol Urban Area agglomeration zone indicates that the annual limit value was exceeded in 2015 but is likely to be achieved by 2022 through the introduction of measures included in the baseline. When combined with the measures outlined in the overview document for the UK we expect this zone to be compliant by 2021.

1.4 Plan structure

General administrative information regarding this agglomeration zone is presented in Section 2.

Section 3 then presents the overall picture with respect to NO₂ levels in this agglomeration zone for the 2015 reference year of this air quality plan. This includes a declaration of exceedance situations within the agglomeration zone and presentation of a detailed source apportionment for each exceedance situation.

An overview of the measures already taken and to be taken within the agglomeration zone both before and after 2015 is given in Section 4.

Baseline modelled projections for each year from 2017 to 2030 for each exceedance situation are presented in Section 5. The baseline projections presented here include, where possible, the impact of measures that have already been taken and measures for which the relevant authority has made a firm commitment to implement. However, it has not been possible to quantify the impact of all the measures. This section therefore also explains which measures have been quantified, and hence included in the model projections, and which measures have not been quantified.

2 General Information About the Zone

2.1 Administrative information

Zone name: Bristol Urban Area

Zone code: UK0009

Type of zone: agglomeration zone

Reference year: 2015

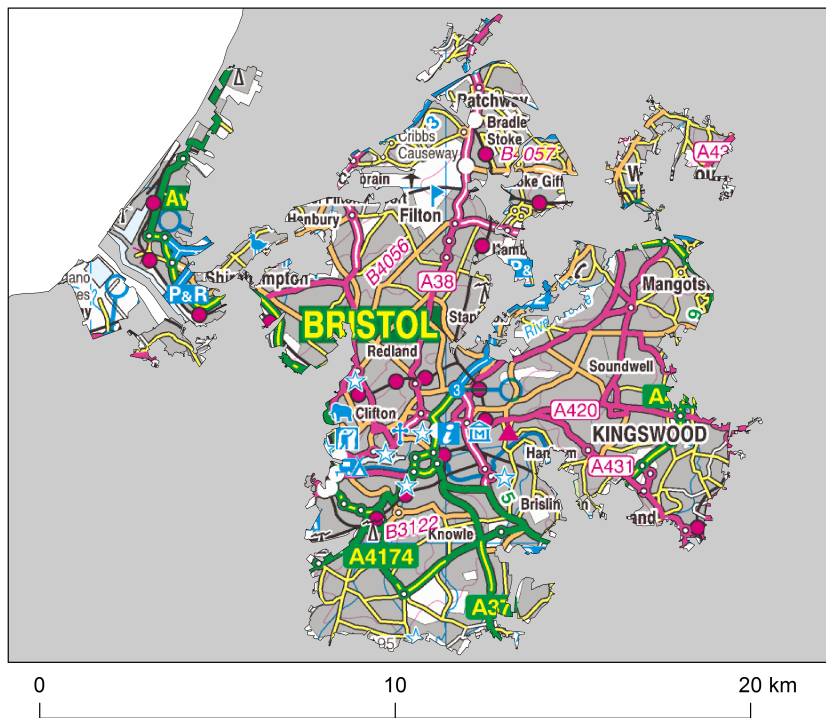
Extent of zone: Figure 1 shows the area covered by the Bristol Urban Area agglomeration zone.

Local Authorities within the zone: Figure 2 shows the location of Local Authorities within the agglomeration zone. A list of these Local Authorities is also given below. The numbers in the list correspond to the numbers in Figure 2.

1. Bath & North East Somerset Council
2. Bristol City Council
3. North Somerset Council
4. South Gloucestershire District Council

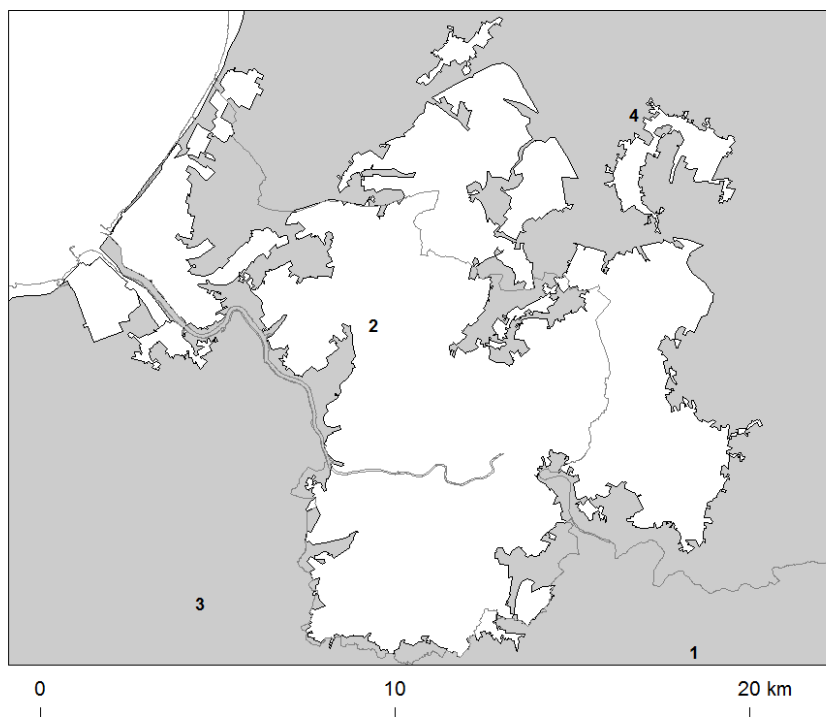
(Note: Local Authority boundaries do not necessarily coincide with zone boundaries. Hence Local Authorities may be listed within more than one zone plan.)

Figure 1: Map showing the extent of the Bristol Urban Area agglomeration zone (UK0009).



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Figure 2: Map showing Local Authorities within the Bristol Urban Area agglomeration zone (UK0009).



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2.2 Assessment details

Measurements

NO₂ measurements in this zone were available in 2015 from the following national network monitoring stations (NO₂ data capture¹ for each station in 2015 shown in brackets):

1. Bristol St Paul's GB0884A (93%)

Full details of monitoring stations within the Bristol Urban Area agglomeration zone are available from <http://uk-air.defra.gov.uk/networks/network-info?view=aurm>.

Modelling

Modelling for the 2015 reference year has been carried out for the whole of the UK. This modelling covers the following extent within this zone:

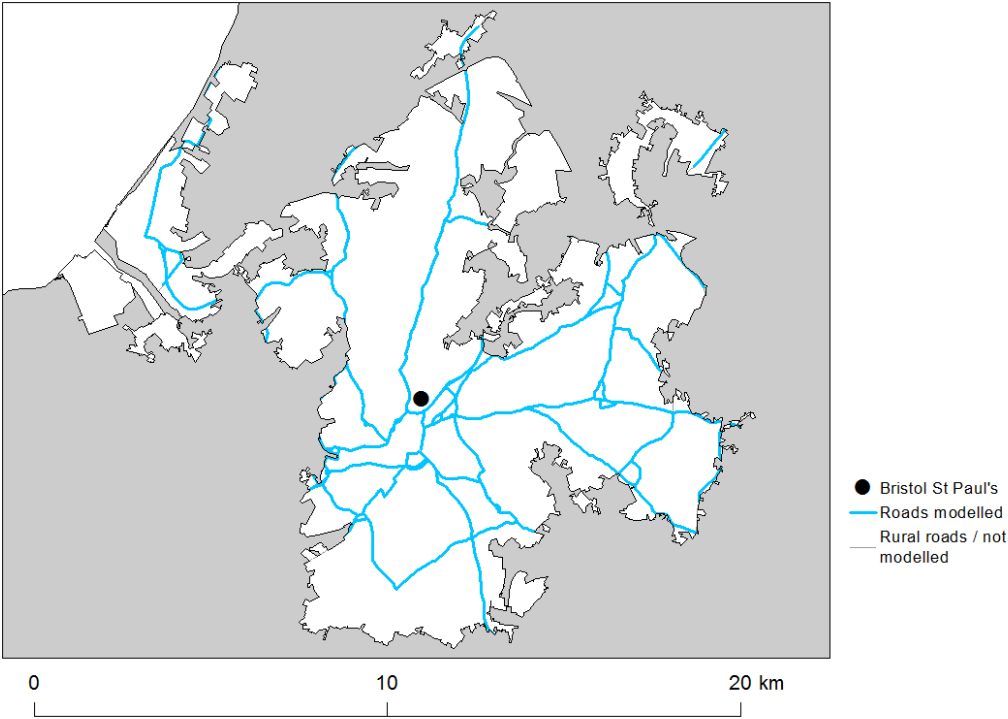
- Total background area within zone (approx): 139 km²
- Total population within zone (approx): 536,979 people

Zone maps

Figure 3 presents the location of the NO₂ monitoring stations within this zone for 2015 and the roads for which NO₂ concentrations have been modelled. NO₂ concentrations at background locations have been modelled across the entire zone at a 1 km x 1 km resolution.

¹Annual data capture is the proportion of hours in a year for which there are valid measurements at a monitoring station, expressed in this document as a percentage. The Implementing Provisions on Reporting (IPR) guidance requires that a minimum data capture of 85% is required for compliance reporting (that is 90% valid data, plus a 5% allowance for data loss due to planned maintenance and calibration). Monitoring stations with at least 75% data capture have been included in the modelling analysis to ensure that a greater number of operational monitoring sites have been used for model calibration and verification purposes. For more information on compliance reporting under European Directives see Section 2.3.

Figure 3: Map showing the location of the NO₂ monitoring stations with valid data in 2015 and roads where concentrations have been modelled within the Bristol Urban Area (UK0009) agglomeration zone.



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2.3 Air quality reporting

From 2001 to 2012 the UK has reported annually on air quality concentrations using a standard Excel questionnaire (Decision 2004/461/EC). These questionnaires are available online from <http://cdr.eionet.europa.eu/gb/eu/annualair>. Since 2013 reporting has been via an e-reporting system (Decision 2011/850/EU) <http://cdr.eionet.europa.eu/gb/eu/>.

In addition, the UK has reported on air quality plans and programmes (Decision 2004/224/EC) since 2003. The most recent previous UK air quality plan for nitrogen dioxide was published in 2015. The plan and supporting documents are available at <https://www.gov.uk/government/collections/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2015> and the submission of this plan via e-reporting is published at <http://cdr.eionet.europa.eu/gb/eu/aqd/h/envvryhbq/>. Historic plans and programmes are available on <http://cdr.eionet.europa.eu/gb/eu/aqpp>.

3 Overall Picture for 2015 Reference Year

3.1 Introduction

There are two limit values for the protection of health for NO₂. These are:

- The annual limit value (annual mean concentration of no more than 40 µgm⁻³)
- The hourly limit value (no more than 18 hourly exceedances of 200 µgm⁻³ in a calendar year)

Within the Bristol Urban Area agglomeration zone the annual limit value was exceeded in 2015. Hence, one exceedance situation for this zone has been defined, NO₂_UK0009_Annual_1, which covers exceedances of the annual limit value. This exceedance situation is described below.

3.2 Reference year: NO₂_UK0009_Annual_1

The NO₂_UK0009_Annual_1 exceedance situation covers all exceedances of the annual mean limit value in the Bristol Urban Area agglomeration zone in 2015.

Compliance with the annual limit value in this exceedance situation has been assessed using a combination of air quality measurements and modelling. Table 1 presents measured annual concentrations at national network stations in this exceedance situation since the 1st Daughter Directive (1999/30/EC) came into force in 2001. This shows that there were no measured exceedances of the annual limit value in this zone in 2015. Table 2 summarises modelled annual mean NO₂ concentrations in this exceedance situation for the same time period. This table shows that, in 2015, 13.5 km of road length was modelled to exceed the annual limit value. There were no modelled background exceedances of the annual limit value. The maximum measured concentration in the zone varies due to changes in emissions and varying meteorology in different years. However, the models are also updated each year to take into account the most up-to-date science, so the modelled results for different years may not be directly comparable. Maps showing the modelled annual mean NO₂ concentrations for 2015 at background and at roadside locations are presented in Figures 4 and 5 respectively. All modelled exceedances of the annual limit value are coloured orange or red in the maps.

The modelling carried out for this exceedance situation has also been used to determine the annual mean NO_x source apportionment for all modelled locations. Emissions to air are regulated in terms of oxides of nitrogen

(NO_x), which is the term used to describe the sum of nitrogen dioxide (NO₂) and nitric oxide (NO). Ambient NO₂ concentrations include contributions from both directly emitted primary NO₂ and secondary NO₂ formed in the atmosphere by the oxidation of NO. As such, it is not possible to calculate an unambiguous source apportionment specifically for NO₂ concentrations; therefore the source apportionment in this plan is presented for NO_x, rather than for NO₂ (for further details please see the UK Technical Report). Table 3 summarises the modelled NO_x source apportionment for the section of road with the highest NO₂ concentration in this exceedance situation in 2015. This is important information because it shows which sources need to be tackled at the location with the largest compliance gap in the exceedance situation.

Figure B.1 in Annex B presents the annual mean NO_x source apportionment for each section of road within the NO₂_UK0009_Annual_1 exceedance situation (i.e. the source apportionment for all exceeding roads only) in 2015.

Table 1: Measured annual mean NO₂ concentrations at national network stations in NO₂_UK0009_Annual_1 for 2001 onwards, μgm^{-3} (a). Data capture shown in brackets.

Site name (EOI code)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bristol Centre (GB0585A)	38 (96)	37 (96)	36 (88)	35 (97)	34 (69)										
Bristol Old Market (GB0639A)	54 (57)		71 (64)	54 (99)	60 (99)	67 (99)	61 (98)	62 (99)	63 (82)	63 (77)	61 (60)				
Bristol St Paul's (GB0884A)						31 (54)	31 (93)	32 (99)	30 (97)	32 (94)	27 (98)	32 (99)	28 (99)	28 (94)	26 (93)

(a) Annual Mean Limit Value = $40 \mu\text{gm}^{-3}$

Table 2: Annual mean NO₂ model results in NO₂_UK0009_Annual_1 for 2001 onwards.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Road length exceeding (km)	86.1	39.7	88.3	57.6	50.2	47.8	41.9	31.8	31.2	47.1	25.9	28.2	18.3	20.6	13.5
Background exceeding (km ²)	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
Maximum modelled concentration (μgm^{-3}) (a)	64.4	62.7	83.6	70.6	82.4	76.1	77.3	80.2	60.8	69.6	56	55	53	54	54

(a) Annual Mean Limit Value = $40 \mu\text{gm}^{-3}$

Table 3: Modelled annual mean NO_x source apportionment at the location with the highest NO₂ concentration in 2015 in NO2_UK0009_Annual_1 (μgm⁻³) traffic count point 57291 on the A4032; OS grid (m): 359900, 173930) .

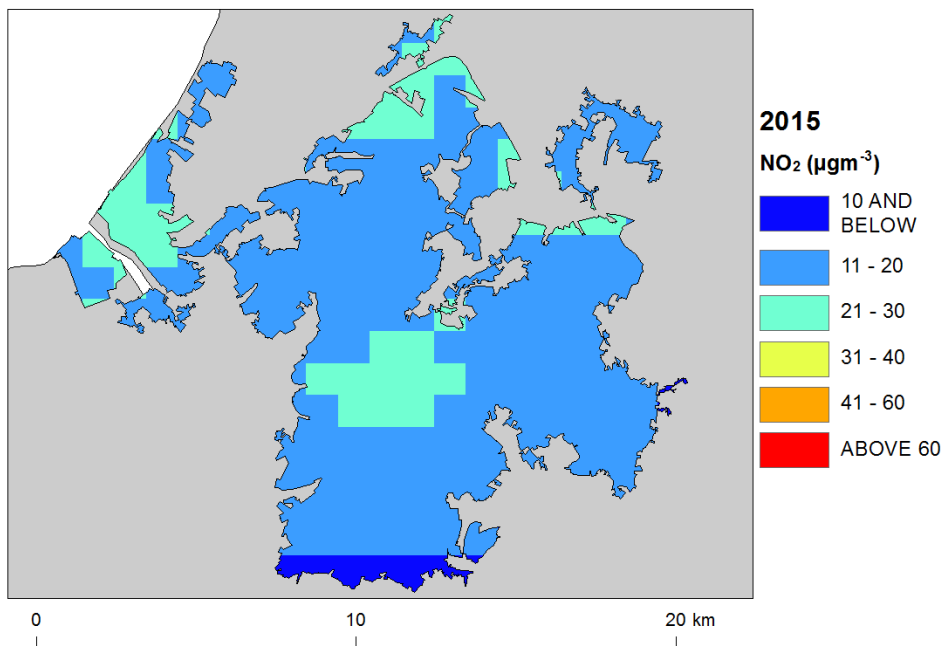
Spatial scale	Component	Concentration at highest road link (a)
Regional background sources NO _x (i.e. contributions from distant sources of > 30 km from the receptor).	Total	4.2
	From within the UK	2.1
	From transboundary sources (includes shipping and other EU member states)	2.1
Urban background sources NO _x (i.e. sources located within 0.3 - 30 km from the receptor).	Total	35.2
	From road traffic sources	22.0
	From industry (including heat and power generation)	1.5
	From agriculture	NA
	From commercial/residential sources	6.2
	From shipping	0.6
	From off road mobile machinery	2.7
	From natural sources	NA
	From transboundary sources	NA
From other urban background sources	2.1	
Local sources NO _x (i.e. contributions from sources < 0.3 km from the receptor).	Total	96.9
	From petrol cars	9.7
	From diesel cars	41.1
	From HGV rigid (b)	9.9
	From HGV articulated (b)	5.1
	From buses	9.1
	From petrol LGVs (c)	0.1
	From diesel LGVs (c)	21.4
From motorcycles	0.4	
From London taxis	0.0	
Total NO _x (i.e. regional background + urban background + local components)		136.2
Total NO ₂ (i.e. regional background + urban background + local components)		54

(a) Components are listed with NO_x concentration of NA when there is no source from this sector.

(b) HGV = heavy goods vehicle

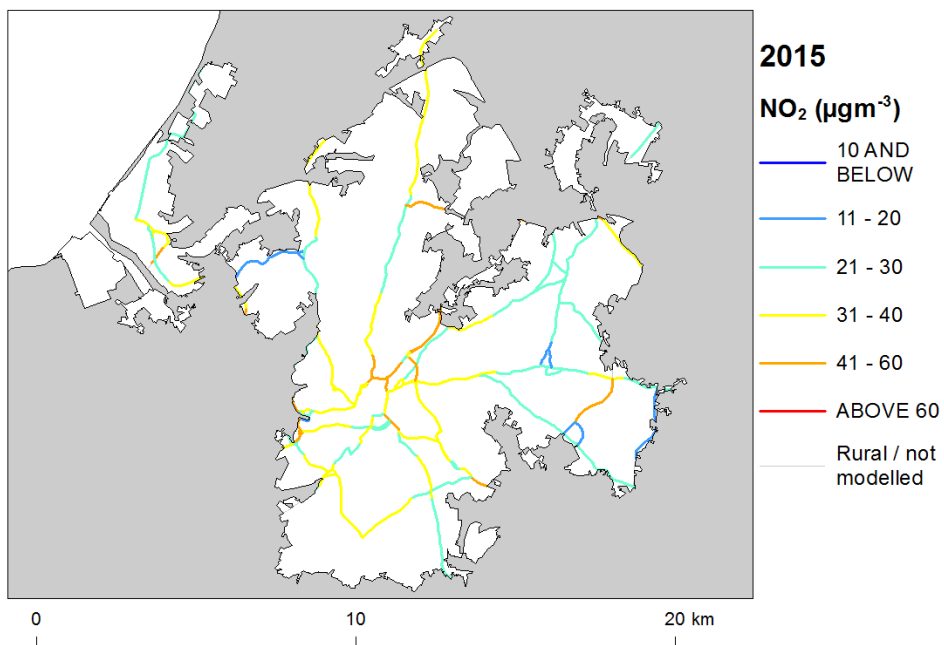
(c) LGV = light goods vehicle

Figure 4: Map of modelled background annual mean NO₂ concentrations 2015. Modelled exceedances of the annual limit value are shown in orange and red.



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Figure 5: Map of modelled roadside annual mean NO₂ concentrations 2015. Modelled exceedances of the annual limit value are shown in orange and red.



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4 Measures

4.1 Introduction

This section gives details of measures that address exceedances of the NO₂ limit values within Bristol Urban Area agglomeration zone. This includes both measures that have already been taken and measures for which there is a firm commitment that they will be taken.

Section 5 then explains the extent to which it has been possible to incorporate the impacts of these measures into the baseline modelling carried out for this assessment.

4.2 Source apportionment

It is important to understand which sources are responsible for causing the exceedance in order to most effectively tailor measures to address the NO₂ exceedance situation described in Section 3 above. This can be achieved by considering the source apportionment for the exceedance situation, also presented in Section 3. A summary of what the source apportionment shows and the implications for which measures would therefore be appropriate is given here.

Local road traffic was the dominant source in this exceedance location in the reference year. The largest contribution was from diesel cars at the location of maximum exceedance with a contribution of 41.1 µgm⁻³ of NO_x out of a total of 136.2 µgm⁻³ of NO_x. Diesel cars and diesel LGVs were important sources on the motorway roads with the highest concentrations in this exceedance situation. Diesel cars, diesel LGVs, and on some roads rigid HGVs and buses. were important sources on the primary roads with the highest concentrations.

This indicates that appropriate measures should impact on local road traffic sources in this zone. Other measures to address the urban background sources may also be beneficial.

4.3 Measures

Measures potentially affecting NO₂ in this agglomeration zone have been taken and/or are planned at a range of administrative levels. These are:

- European Union
- National (i.e. England, Scotland, Wales, Northern Ireland or whole UK)
- Local (i.e. UK Local Authorities)

Details of European Union measures (e.g. Euro Standards, Fuel Quality Directives, Integrated Pollution Prevention and Control) can be found on the European Commission's website (http://ec.europa.eu/environment/air/index_en.htm). Details of national measures are given in the UK overview document.

Relevant Local Authority measures within this exceedance situation are listed in Table C.1 (see Annex C). Table C.1 lists measures which a local authority has carried out or is in the process of carrying out, plus additional measures which the local authority is committed to carrying out or is investigating with the expectation of carrying out in the future.

The Local Authorities in the Bristol Urban Area agglomeration zone have developed a Joint Local Transport Plan. One of their main aims is to improve air quality. Priorities for the area focus on promoting the use of buses,

cycling and walking as well as increasing park and ride services. The intention is to encourage more drivers to switch to public transport thereby reducing car traffic on main routes. They also have a carbon emissions strategy that promotes the use of alternatives to cars.

The area's air quality strategy focuses on raising awareness and providing information about air quality as well as promoting 'eco driving' training with focus on high mileage business users to encourage more fuel efficient driving and behavioral change.

The local transport plan aims to help support the uptake of national measures aimed at reducing emissions through new vehicle technologies and fuels, working with bus operators and the freight industry on appropriate measures including the promotion of 'eco-driving'.

The area is also working on building on these policies and measures, including by improving council vehicle fleets, working with car clubs, to achieve greater use of more fuel-efficient vehicles, and the provision of infrastructure needed for the wider introduction of electric cars and other vehicles, e.g. electric charging points.

Funding has been secured from the Office for Low Emission Vehicles for the installation of rapid charging points for electric vehicles across parts of the area. The first were installed in Spring 2014 and by the end of 2015, 15 rapid charging points had been installed. In partnership with Firstgroup, funding from the Clean Vehicle Technology Fund has also converted buses to Euro 6. A city car club is also buying six new diesel electric vehicles and comparing them with conventional vehicles. Electric powered cycles are also being trialled.

Two transport schemes are also expected by Bristol City council to provide an overall air quality improvement through modal shift. The Metro West suburban rail project will provide new lines, new stations and increased train frequency and is expected to lead to increased public transport use by 2020. New rapid bus transit routes will mean improved and quicker bus routes to the city centre and areas outside.

In February 2017 Bristol City Council and South Gloucestershire Council were awarded funding from the Air Quality Grant programme for a Clean Air Zone feasibility study.

4.4 Measures timescales

Timescales for national measures are given in the UK overview document.

Local Authorities report on progress with the implementation of their action plans annually and review action plan measures regularly. Information on local measures was collected in February/March 2015. Local authorities were asked to review and, where necessary, provide updates to measures in March/April 2017. Hence, any Local Authority action plans and measures adopted by Local Authorities after this time have not been included in this air quality plan, unless additional information was provided during the consultation process.

The reference year for this air quality plan is 2015. Where measures started and finished before 2015, then the improvement in air quality resulting from these measures will have already taken place before the reference year and the impact of these measures will have been included in the assessment where the measure has had an impact on the statistics used to compile the emission inventory. Many measures started before the reference year and will continue to have a beneficial impact on air quality well beyond the reference year. Measures with a start date before 2015 and an end date after 2015 may have an impact on concentrations in the reference year and a further impact in subsequent years. Where the Status column in Annex C is 'Implementation', this shows that this measure is already underway or that there is a commitment for this measure to go ahead. Where the Status is 'Planning', 'Preparation' or 'Other' the level of commitment is less clear and it is possible some of these measures may not go ahead.

5 Baseline Model Projections

5.1 Overview of model projections

Model projections for each year from 2017 to 2030, starting from the 2015 reference year described in Section 3, have been calculated in order to determine when compliance with the NO₂ limit values is likely to be achieved on the basis of EU, regional and local measures currently planned. Details of the methods used for the baseline emissions and projections modelling are provided in the UK technical report.

For national measures, it has not been possible to quantify the impact of all measures on emissions and ambient concentrations. The impact for all quantifiable measures has been included in the baseline projections.

The impacts of the individual Local Authority measures have not been explicitly included in the baseline model projections. However, measures may have been included implicitly if they have influenced the traffic counts for 2015 (used as a basis for the compilation of the emission inventory) or in the traffic activity projections to 2020 and beyond (used to calculate the emissions projections). It should be recognised that these measures will have a beneficial impact on air quality, even if it has not been possible to quantify this impact here.

5.2 Baseline projections: NO₂_UK0009_Annual_1

Table 4 presents summary results for the baseline model projections for each year from 2017 to 2030 for the NO₂_UK0009_Annual_1 exceedance situation. This shows that the maximum modelled annual mean NO₂ concentration predicted for 2020 in this exceedance situation is 45 $\mu\text{g}\text{m}^{-3}$. By 2022, the maximum modelled annual mean NO₂ concentration is predicted to drop to 40 $\mu\text{g}\text{m}^{-3}$. Hence, the model results suggest that compliance with the NO₂ annual limit value is likely to be achieved by 2022 under baseline conditions.

Figure 6 and 7 presents maps of projected annual mean NO₂ concentrations at background and roadside locations respectively in 2022, the year at which compliance is achieved. For reference Figures 8 and 9 show maps of projected annual mean NO₂ concentrations in 2020, 2025 and 2030 for background and roadside locations respectively.

It should be noted that the baseline projections presented here include the impacts of some measures, where they can be quantified, that have already been or will be implemented.

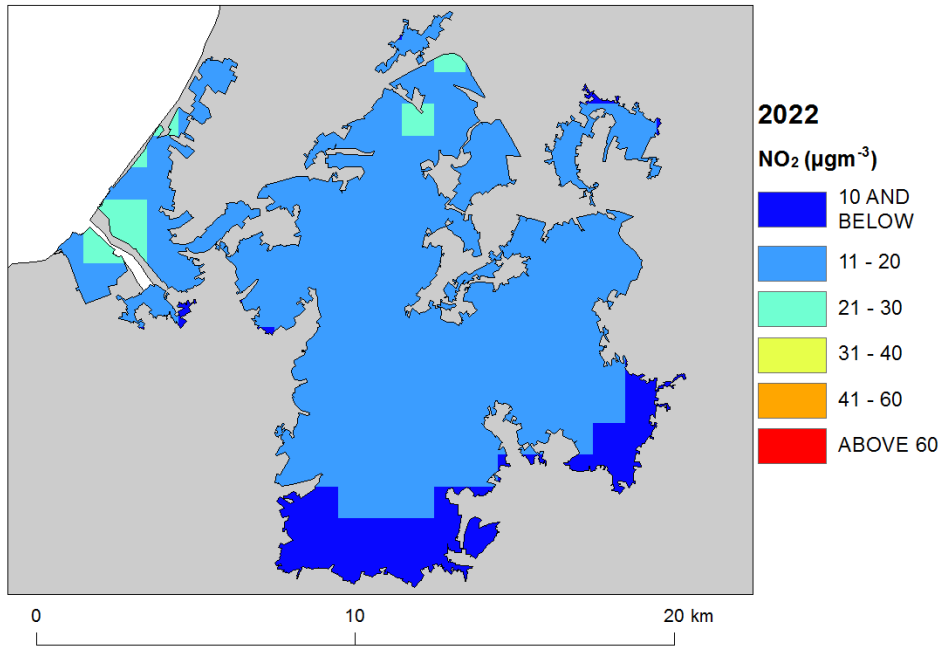
Table 4: Annual mean NO₂ model results in NO₂_UK0009_Annual_1.

	2015	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Road length exceeding (km)	13.5	9.2	6.2	4.6	1.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Background exceeding (km ²)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum modelled concentration NO ₂ (μgm ⁻³) (a)	54	52	49	47	45	42	40	38	36	34	33	31	30	29	28
Corresponding modelled concentration NO _x (μgm ⁻³) (b)	136	126	119	113	105	98	91	85	80	75	70	66	63	60	57

(a) Annual Mean Limit Value = 40 μgm⁻³

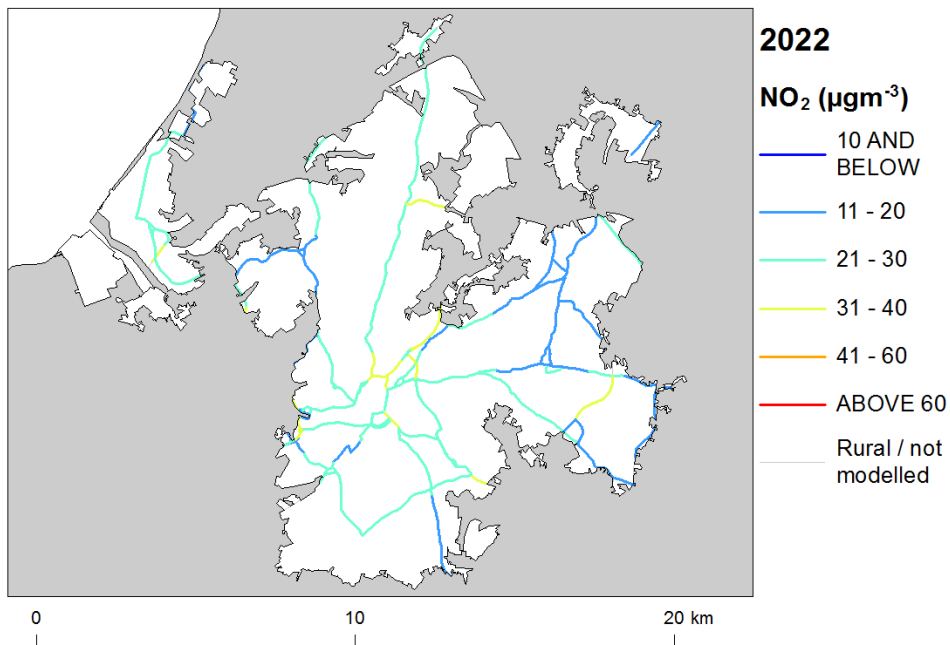
(b) NO_x is recorded here for comparison with the NO_x source apportionment graphs for 2015 presented in Annex B of this plan. Limit values for EU directive purposes are based on NO₂.

Figure 6: Background baseline projections of annual mean NO₂ concentrations in 2022, the year at which compliance is achieved under baseline conditions. Modelled exceedances of the annual limit value are shown in orange and red.



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Figure 7: Roadside baseline projections of annual mean NO₂ concentrations in 2022, the year at which compliance is achieved under baseline conditions. Modelled exceedances of the annual limit value are shown in orange and red.



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Figure 8: Background baseline projections of annual mean NO₂ concentrations in 2020, 2025 and 2030. 2015 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.

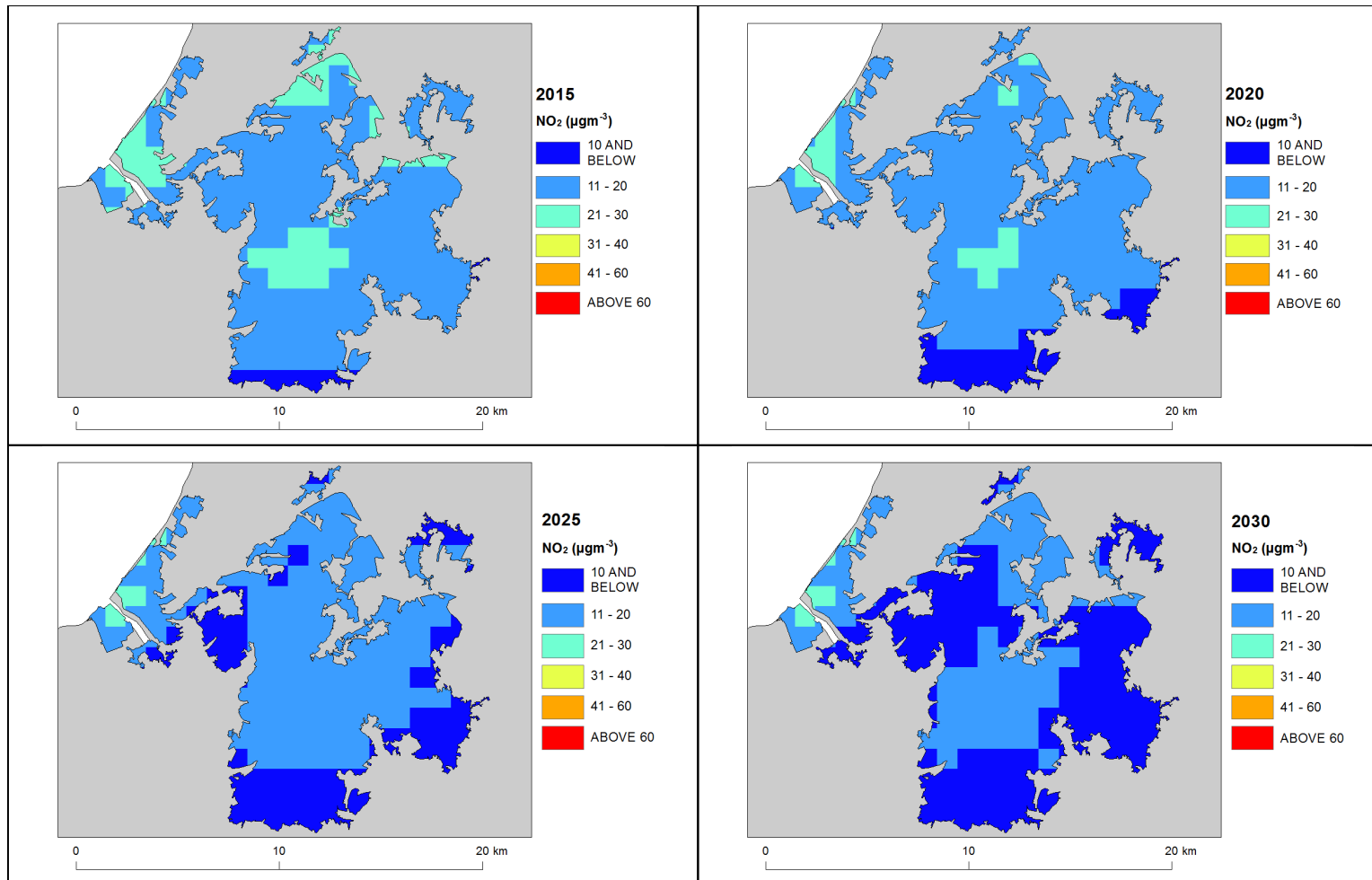
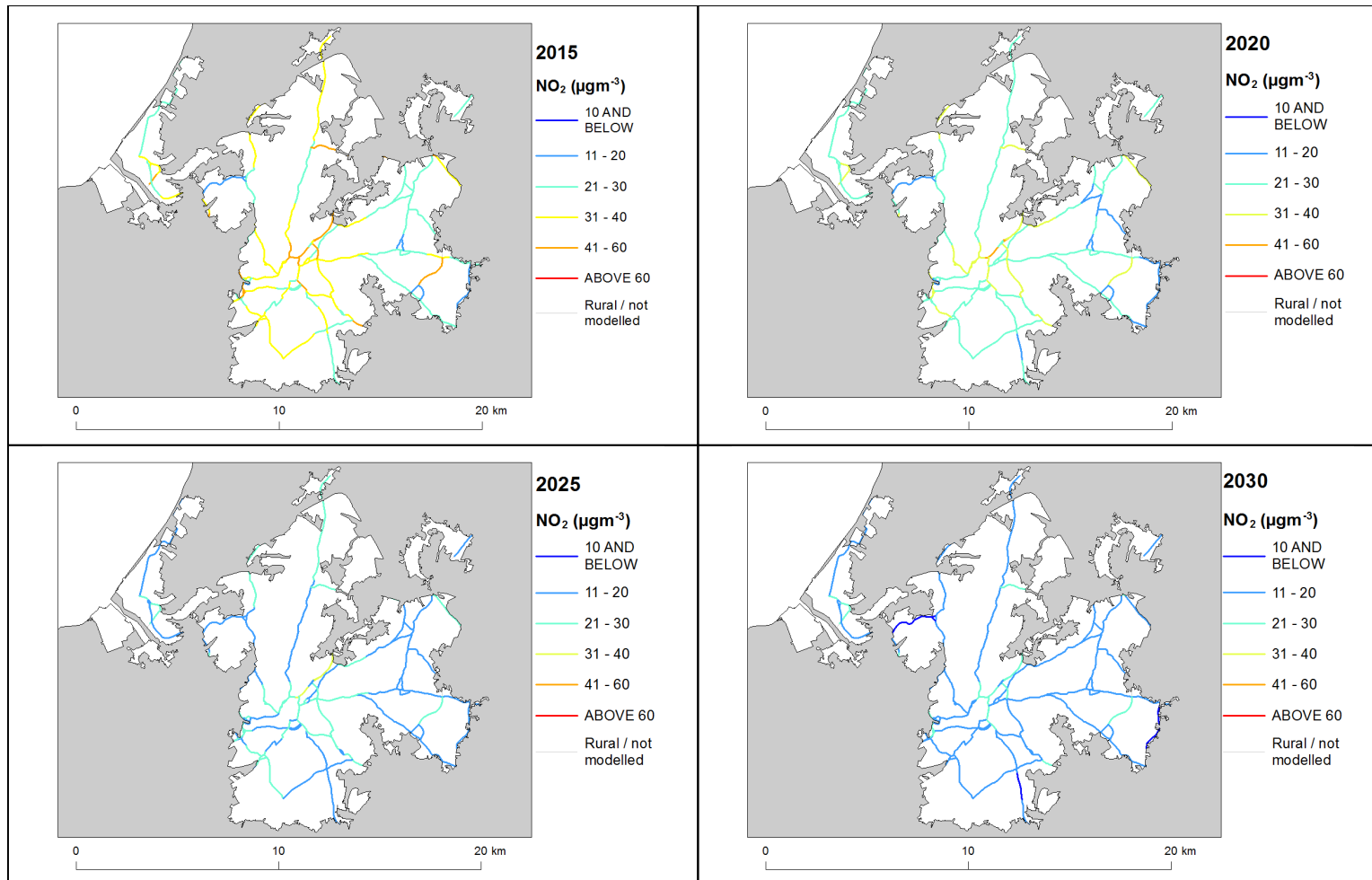


Figure 9: Roadside baseline projections of annual mean NO₂ concentrations in 2020, 2025 and 2030. 2015 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.



Annexes

A References

1st Daughter Directive 1999/30/EC. Council Directive 1999/30/EC, of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (The First Daughter Directive). From the Official Journal of the European Communities, 29.6.1999, En Series, L163/41.

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Decision 2004/224/EC. Commission Decision of 20 February 2004 laying down arrangements for the submission of information on plans or programmes required under Council Directive 96/62/EC in relation to limit values for certain pollutants in ambient air. From the Official Journal of the European Union, 6.3.2004, En Series, L68/27

Decision 2004/461/EC. Commission Decision of 29 April 2004 laying down a questionnaire to be used for annual reporting on ambient air quality assessment under Council Directives 96/62/EC and 1999/30/EC and under Directives 2000/69/EC and 2002/3/EC of the European Parliament and of the Council. From the Official Journal of the European Union, 30.4.2004, En Series, L156/78

Decision 2011/850/EU. Commission Implementing Decision of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality. From the Official Journal of the European Union, 17.12.2011, En Series, L335/86

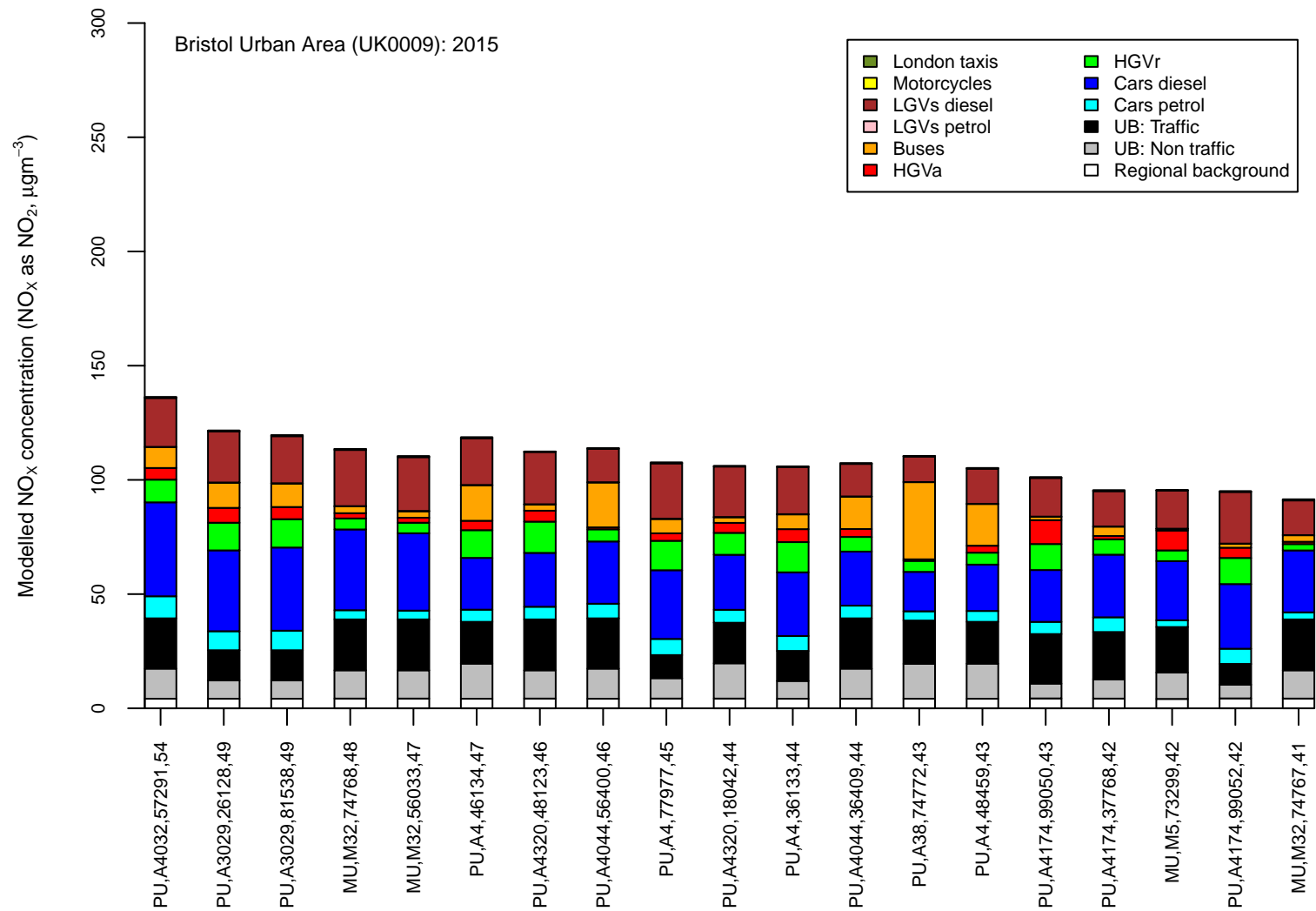
IPR 2013. Guidance on the Commission Implementing Decision laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air (Decision 2011/850/EU). http://ec.europa.eu/environment/air/quality/legislation/pdf/IPR_guidance1.pdf

UK Air Quality Plan for tackling roadside nitrogen dioxide concentrations and the UK technical report are available at: <http://www.gov.uk/defra>.

B Source apportionment graphs

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Figure B.1: Annual mean roadside NO_x source apportionment plots for all roads exceeding the annual mean NO₂ limit value in 2015.



Road class (MU = motorway, PU = primary road, TU = trunk road), road number, census id 15 and modelled NO₂ concentration (μgm⁻³)

C Tables of measures

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Table C.1 Relevant Local Authority measures within Bristol Urban Area (UK0009)

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_1	Bath Transport Package	P&R expansion, Real Time Information for buses, new bus priority measures and vehicle access restrictions on some city centre streets.	Traffic planning and management: Other measure	Implementation	Start date: 2008 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Public transport patronage (P&R). Traffic flows on radial routes (growth comparisons). Vehicle mix comparison (proportion of traffic that is private cars). Average journey time. Target emissions reduction: N/a
Bath & North East Somerset Council_2	Cleveland Bridge area restrictions feasibility study	Operators of vehicles not meeting agreed emission targets would pay a daily charge to enter.	Traffic planning and management: Low emission zones	Evaluation	Start date: 2011 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Modelled NO2 levels. Target emissions reduction: N/a
Bath & North East Somerset Council_3	Low Carbon Bus Trial (CIVITAS 1.3)	To demonstrate the feasibility of hybrid diesel-electric double deck bus operation in the City of Bath.	Public procurement: New vehicles, including low emission vehicles	Implementation	Start date: 2011 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Fuel usage / costs. Target emissions reduction: N/a
Bath & North East Somerset Council_4	Urban Freight Transhipment (CIVITAS 7.2)	A facility close to the motorway, where goods are consolidated for dispatch in a smaller, clean fuel vehicle.	Traffic planning and management: Freight transport measure	Implementation	Start date: 2011 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: HGV traffic flows. Electric vehicle. Number of participating businesses. NOx emissions. Target emissions reduction: 1% p.a. from HGVs (provisional target)
Bath & North East Somerset Council_5	Improved Enforcement of TROs (CIVITAS 3.4 - Demand Management Strategies)	A variable message sign and automatic number plate recognition cameras at Upper Bristol Road/Windsor Bridge Road to discourage heavy goods vehicles from using the central A4 corridor where a traffic regulation order exists.	Traffic planning and management: Freight transport measure	Evaluation	Start date: 2010 Expected end date: 2010 Spatial scale: Local Source affected: Transport Indicator: HGV traffic flows. NO2 levels. Target emissions reduction: N/a
Bath & North East Somerset Council_6	Bicycle Hire including Electric Bikes (CIVITAS 6.4 and 6.5)	Installation and operation of a number of cycle stands with some for electric powered bikes.	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Implementation	Start date: 2011 Expected end date: 2014 Spatial scale: Local Source affected: Transport Indicator: Vehicle mix (% bikes). No. of hires. Target emissions reduction: N/a

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_7	Electric Vehicle Recharging Points	Installation of charging points to enable greater use of electric vehicles.	Public procurement: Other measure	Implementation	Start date: 2011 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Vehicle mix (count of electric vehicles). Number of charges p.a. Number of different users. Target emissions reduction: 1% of private car emissions p.a. (provisional target)
Bath & North East Somerset Council_8	Improve Building Emission Assessments	Develop spreadsheet tool for emissions of nitric oxide and other pollutants from commercial buildings, for inclusion in planning application Air Quality Assessments.	Other measure: Other measure	Planning	Start date: 2011 Expected end date: 2016 Spatial scale: Local Source affected: Commercial and residential sources Indicator: Number of air quality assessments including spreadsheet tool. Target emissions reduction: N/A
Bath & North East Somerset Council_9	ECO Stars Vehicle Recognition Scheme	Review effectiveness of ECOStars Scheme in other authority areas and undertake a feasibility study into the introduction of a scheme in the district.	Other measure: Other measure	Planning	Start date: 2011 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Number of haulage operators & vehicles audited. HGV vehicle mix survey (number plate and engine standard). Target emissions reduction: N/A
Bath & North East Somerset Council_10	Review Council and Emergency Service Vehicle Fleet	Review the vehicle fleets in terms of Euro emission standards, vehicle age, particulate traps and general specification. Identify cleaner vehicles, emissions abatement technologies and related funding sources for their introduction.	Public procurement: Other measure	Planning	Start date: 2011 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Euro engine standard survey. Target emissions reduction: 5% p.a. (provisional target)
Bath & North East Somerset Council_11	Monitoring of Bus Fleet Quality	Monitor and review the bus fleet age, specification and maintenance in Bath.	Public procurement: Cleaner vehicle transport services	Implementation	Start date: 2011 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Euro engine standard survey. Number of emissions abatement retrofit / original design. Target emissions reduction: 5% emissions over whole fleet p.a. (provisional target)

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_12	Transport & Travel Information	Free mapping system, wayfinding signage, public transport shelter and flag products together with transport information web pages.	Public information and Education: Other mechanisms	Implementation	Start date: 2011 Expected end date: 2011 Spatial scale: Local Source affected: Transport Indicator: Number of signs. Contribute to achieving a target increase in bus passenger journeys per annum of 3% on a 2001/2 base level of 9.184m. Contribute to achieving an improvement in favourability recorded by the Bath area bus satisfaction survey. The target is for overall satisfaction to improve from 38% in 2003/4 to 44% in 2011/12. Target emissions reduction: N/a
Bath & North East Somerset Council_13	Alternative Exhaust Emissions Abatement	Review of available retrofit technologies and fuel additives for exhaust emissions abatement and a feasibility study for the introduction into vehicle fleets operating in Bath.	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2011 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Number of retrofitted HGVs. Target emissions reduction: N/a
Bath & North East Somerset Council_14	Rossiter Road Traffic Management Measures	Review of options for improvement in road layout to improve air quality and reduce congestion.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Traffic flows. NO2 levels. Target emissions reduction: Moving traffic from receptors.
Bath & North East Somerset Council_15	Promotional Website	Providing open data and offering advice and incentives for helping improve air quality.	Public information and Education: Internet	Implementation	Start date: 2014 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Number of visits to website. Target emissions reduction: N/a
Bath & North East Somerset Council_16	Corporate Travel Plan	Reduce emissions from Bath and North East Somerset Council business travel.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Business mileage. Modal shift (e.g. number of employees transferred from private car to bike, walking or public transport bus for commuting). Target emissions reduction: 1% p.a. (provisional target)

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_17	Two Tunnels Greenway (shared cycle and pedestrian path)	Reopen traffic free railway path through two tunnels for cycling and walking.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2013 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: Cycle journeys on route. Target emissions reduction: N/a
Bath & North East Somerset Council_18	Bath Transport Strategy	To reduce congestion, improve air quality and allow people to move around to make the long-term economic strategy for the area work.	Traffic planning and management: Other measure	Planning	Start date: 2014 Expected end date: 2029 Spatial scale: Whole town or city Source affected: Transport Indicator: Journey times, public transport patronage, traffic counts & active travel usage. Target emissions reduction: Reduction p.a.
Bath & North East Somerset Council_19	Low Emission Zone Feasibility Study	Reducing emissions from heavy duty vehicles in urban through-routes.	Traffic planning and management: Other measure	Evaluation	Start date: 2014 Expected end date: 2014 Spatial scale: Local Source affected: Transport Indicator: N/a Target emissions reduction: Reduce emissions from HDVs by 5% pa
Bath & North East Somerset Council_20	Traffic Regulation Conditions for tour buses	Reducing emissions from tour buses in central Bath.	Traffic planning and management: Other measure	Implementation	Start date: 2006 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Number and spec of tour bus. Target emissions reduction: N/a
Bath & North East Somerset Council_21	Clean Air Act enforcement	Enforcement of regulations in the Bath smoke control zone.	Other measure: Other measure	Implementation	Start date: 2001 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: Number of successful outcomes of informal notices issued. Target emissions reduction: N/a
Bath & North East Somerset Council_22	New Air Quality Action Plan for Bath	To review and update the Bath Air Quality Action Plan.	Other measure: Other measure	Planning	Start date: 2016 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: Dependent on measures. Target emissions reduction: NO2 and PM emissions reduction - 5% p.a. (provisional target)

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_23	Quantify the benefits from the one way system pilot for the High Street including monitoring and modelling of air quality impacts.	N/A	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Reduction in nitrogen dioxide concentrations. Traffic Counts. Reduction in emissions of nitrogen oxides. Target emissions reduction: Predicted reduction of approximately 3 g/m3 NO2 on High Street and approximately 1 microgram increase on some areas of alternative route. No significant improvement predicted on Charlton Road.
Bath & North East Somerset Council_24	Targeted information campaign for the most vulnerable groups (i.e. asthmatics, Chronic Obstructive Pulmonary Disease etc.).	N/A	Public information and Education: Other mechanisms	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: The number of hits on website. Target emissions reduction: No reduction in concentration in Nitrogen Dioxide, however there would be an exposure reduction for residents.
Bath & North East Somerset Council_25	This Action Plan influences planning policy to require electric vehicle charge points for each new property.	N/A	Public procurement: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of properties where a power spur for an electric vehicle charge point is installed. Number of planning applications approved with a vehicle charge point as an advisory or required condition. Target emissions reduction: % reduction in NOx emissions compared to a diesel.
Bath & North East Somerset Council_26	Increase public charging points through 'Ultra Low West' (Source West) EV charging infrastructure programme.	N/A	Public procurement: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of charge points. Number of charging sessions per year. Target emissions reduction: % reduction in NOx emissions compared to a diesel.

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_27	Recommend tree planting in future infrastructure programmes	N/A	Other measure: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of trees planted. Target emissions reduction: Provision of a barrier to protect residents and visitors
Bath & North East Somerset Council_28	This Action Plan influences planning policy to encourage the provision of cycle parking for each new property.	N/A	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of new properties with cycle storage. Number of planning applications approved with cycle storage as advisory or required condition. Target emissions reduction: % reduction in NOx emissions compared to a diesel.
Bath & North East Somerset Council_29	Explore the promotion of an Electric Zone.	N/A	Public procurement: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of electric vehicles in peak hours in zone with a manual traffic count. Number of signs erected. Number of charging sessions. Target emissions reduction: N/A
Bath & North East Somerset Council_30	Influence the design of developments to improve access to public transport, cycling and walking routes.	N/A	Traffic planning and management: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of approved planning applications with minimum 30 minute bus frequency in or adjacent to site (with 100 metre of the site). Target emissions reduction: Negligible
Bath & North East Somerset Council_31	Support the creation of a local Air Quality Action Group.	N/A	Public information and Education: Other mechanisms	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Established as part of the remit of existing of new group. Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_32	Keynsham Greenway links to National Cycle Network 4, Wellsway School and riverside path into Bristol and S Glos with new bridge over River Avon.	N/A	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Delivery of project. Number of cycle trips from annual surveys. Target emissions reduction: N/A
Bath & North East Somerset Council_33	Work with Community Transport to promote the use of Low emission dial-a-ride vehicles.	N/A	Public procurement: New vehicles, including low emission vehicles	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Low emission vehicle journeys / miles. Target emissions reduction: % reduction in NOx emissions compared to a diesel.
Bath & North East Somerset Council_34	Identify, influence and publicise pedestrian and cycling facility improvements	N/A	Traffic planning and management: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Audit of infrastructure completed. Recommendation will be integrated into this plan. Walking and cycling surveys Target emissions reduction: N/A
Bath & North East Somerset Council_36	Identify and publicise priority cycling routes to support a cycling culture for all.	N/A	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Cycling routes identified. Target emissions reduction: N/a
Bath & North East Somerset Council_37	Encourage low emission bus services in Keynsham	N/A	Public procurement: Cleaner vehicle transport services	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of bus routes serviced by a Low emission vehicle Target emissions reduction: % reduction in NOx emissions compared to a diesel. (or milligrams)

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_38	Increase public education messages which promote healthier choices for short journeys	N/A	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Delivery of a public education campaign Target emissions reduction: No reduction in concentration. Exposure reduction
Bath & North East Somerset Council_39	Work with bus operators on improved services, ticketing and simplified fare structure.	N/A	Traffic planning and management: Improvement of public transport	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: B&NES area bus usage figures. Annually Bus Passenger Satisfaction surveys for B&NES (Transport Focus). Target emissions reduction: N/A
Bath & North East Somerset Council_40	Support the provision of improved lighting on cycle path.	N/A	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Lighting provided to key locations. Target emissions reduction: N/A
Bath & North East Somerset Council_41	Advocate increased rail service via MetroWest - resulting in increase from hourly to half-hourly rail service.	N/A	Traffic planning and management: Other measure	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Project implementation. Rail patronage per service at Keynsham (annual rail survey). Target emissions reduction: Offsets less efficient modes.
Bath & North East Somerset Council_42	Advice to land owners on planting that can help to protect their properties from air pollution.	N/A	Public information and Education: Other mechanisms	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of hits on website Target emissions reduction: No reduction in concentration. Reduction in exposure to NO2 and fine particles.

Measure code	Description	Focus	Classification	Status	Other information
Bath & North East Somerset Council_43	Encourage low emission bus services in Saltford.	N/A	Public procurement: Cleaner vehicle transport services	Planning	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Number of bus routes serviced by a Low emission vehicle Target emissions reduction: % reduction in NOx emissions compared to a diesel.
Bath & North East Somerset Council_44	Continue feasibility work on reopening Saltford Station.	N/A	Traffic planning and management: Improvement of public transport	Other	Start date: N/A Expected end date: N/A Spatial scale: Local Source affected: Transport Indicator: Completed feasibility study Target emissions reduction: Requires air quality assessment
Bristol City Council_1	Area speed reduction through 20mph zones within Air Quality Management Area (AQMA)	Progress on 20 mph zones around schools and adjacent to Showcase bus routes delivered through Local transport Plan (LTP). Draft Road Hierarchy Review proposes 20 mph speed limit in all residential areas.	Traffic planning and management: Reduction of speed limits and control	Implementation	Start date: 2011 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: No Specific Indicator- Various before and after surveys will be carried out monitoring air quality within 20mph zones, as well as on traffic speeds, road casualties and noise. Target emissions reduction: Improvement in Air Quality during pilot / reduction in vehicle emissions (NO2)
Bristol City Council_2	Travel plans with increased incentives for schools and organisations within the AQMA	Continued progress being made on workplace travel plans through LTP and Planning process. Sustainable Schools Strategy being developed. Additional focus on school travel plans to increase the take-up rate and achieve the target of all schools having a travel plan.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2001 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: No specific JLTP3 indicator Target emissions reduction: N/A
Bristol City Council_3	Safer routes to schools to be extended within the AQMA	SRS approach being integrated into the Health Schools initiative described in previous Travel Plans measure and delivered through LTP.	Traffic planning and management: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: No Specific Indicator Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Bristol City Council_4	Extension of travel marketing	Continued promotion of driver behaviour materials and integration of air quality issues into wider BCC publicity and transport awareness work. Improved Air Quality web pages on Council's web site. Real-time bus information now available on web site.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Bristol City Council_5	Expand car clubs to include private developments and business clubs	The Bristol Car Club has continued to expand and now has 39 cars and 600 members. Since the pilot project ended in 2006 the club has continued to operate without Council subsidy. Growth of the club continues to be boosted by funding secured by the Council through Section 106 contributions from planning applications.	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: Membership numbers, numbers of locations/vehicles Target emissions reduction: N/A
Bristol City Council_6	Speed management strategy through LTP would have additional resources targeted in AQMA	Some progress through LTP but no additional Air Quality Action Plan (AQAP) measures introduced.	Traffic planning and management: Reduction of speed limits and control	Preparation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Bristol City Council_7	Additional staff resources to enforce parking/delivery restrictions to ease/speed flows	Review of Council's parking strategy and enforcement programme is completed. Targeted enforcement remains a core activity of the Council's parking management strategy and Showcase bus route programme. Plans to introduce extensive Controlled Parking Zones are being drawn up, including Central Area Controlled Parking Zone (CPZ) extensions and Residents Parking Zones (RPZs).	Traffic planning and management: Management of parking places	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Bristol City Council_8	Reduced motorway limits around AQMA	Speed limits to be reduced on southern end of M32 as part of bus lane scheme. More extensive speed limit reductions likely if further bus lanes are introduced as part of M32 Park & Ride.	Traffic planning and management: Reduction of speed limits and control	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: Unknown, managed motorways project yet to be implemented emissions reductions expected post-implementation.

Measure code	Description	Focus	Classification	Status	Other information
Bristol City Council_9	Traffic management to minimise congestion	Minimisation of congestion in city	Traffic planning and management: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: No specific indicator Target emissions reduction: N/A
Bristol City Council_10	Re-allocation of road space	Create better cycle infrastructure	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Journey time improvements through the UTMC Target emissions reduction: N/A
Bristol City Council_11	Road user charging	This measure would require feasibility studies, however we are only considering this measure at this stage	Traffic planning and management: Congestion pricing zones	Evaluation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Bristol City Council_12	Encouraging/facilitating working from home	Promoted through the area travel plan for the Temple Quarter Enterprise Zone (TQEZ)	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Bristol City Council_13	Intensive active travel campaign and infrastructure	Local Sustainable Transport Fund (LSTF) project that focuses on engaging with schools, communities and business	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Infrastructure use measured through traffic counters Target emissions reduction: N/A
Bristol City Council_14	Promotion of cycling	Through the LSTF project	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Infrastructure use measured through traffic counters Target emissions reduction: N/A
Bristol City Council_15	Promotion of walking	Through the LSTF project and public health focuses	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Infrastructure use measured through traffic counters Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Bristol City Council_16	Promotion of rail and inland waterways	Through the MetroWest project, that seeks to improve services and routes across the West of England	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2022 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Use of MeroWest services Target emissions reduction: N/A
Bristol City Council_17	Public information internet	Using the TravelWest website	Public information and Education: Internet	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Website hits Target emissions reduction: N/A
Bristol City Council_18	Public information leaflets	Through the LSTF project	Public information and Education: Leaflets	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: No specific indicator Target emissions reduction: N/A
Bristol City Council_19	Public information radio	Through the LSF project	Public information and Education: Radio	Implementation	Start date: 2014 Expected end date: 2014 Spatial scale: Whole agglomeration Source affected: Transport Indicator: No specific indicator Target emissions reduction: N/A
Bristol City Council_20	Temple Circus improvements	Through the Revolving Infrastructure Fund to enable access to the Temple Quarter Enterprise Zone	Traffic planning and management: Improvement of public transport	Planning	Start date: 2014 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: Infrastructure use measured through traffic counters Target emissions reduction: N/A
Bristol City Council_21	Public cycle hire scheme	This requires a detailed business case	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Evaluation	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: Use of cycle hire service Target emissions reduction: N/A
Bristol City Council_22	Cycle network	Delivering the cycle network as described in the Bristol Cycle Strategy	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Other	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Infrastructure use measured through traffic counters Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Bristol City Council_23	Bus route improvements	Through the MetroBus project, which is a West of England wide bus rapid transit project	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2014 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Transport Indicator: Use of MetroBus services Target emissions reduction: N/A
Bristol City Council_24	Working in partnership with Faxe, a journey sharing app and platform to allow people to share	Faxe set up in Bristol to allow businesses to set up journey sharing groups	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Number of Faxe groups set up Target emissions reduction: N/A
Bristol City Council_25	Car club plans	Plans to expand car club bays and vehicles, particularly with a focus on ULEVs	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: Number of car club members Target emissions reduction: N/A
Bristol City Council_26	Strategic routes for HGV's	As part of improvements to the freight strategy for the area	Traffic planning and management: Freight transport measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: Level of congestion through city centre by freight Target emissions reduction: N/A
Bristol City Council_27	Out of hours delivery	This will be considered as new practices are introduced to the freight strategy for the city	Traffic planning and management: Freight transport measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: Level of congestion through city centre by freight Target emissions reduction: N/A
Bristol City Council_28	Promotion of low emission public transport	Geo-fencing technology is being trialled in the city, with plans to provide electric hubs at interchange points	Public procurement: Cleaner vehicle transport services	Preparation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Air quality indicators Target emissions reduction: N/A
Bristol City Council_29	Bus retrofit	Clean vehicle technology funding has been awarded to retrofit buses in Bristol and Bath	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2014 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Air quality indicators Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Bristol City Council_30	Low emission zone	This will be piloted through the CIVITAS project	Traffic planning and management: Low emission zones	Evaluation	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: Air quality indicators Target emissions reduction: N/A
Bristol City Council_31	Introduction of EV charging infrastructure throughout region	Through the ICT4EVEU and OLEV funding the focus was to develop an EV charging network in the region as well as ICT systems backup	Public procurement: Other measure	Implementation	Start date: 2012 Expected end date: 2015 Spatial scale: Whole agglomeration Source affected: Transport Indicator: No Specific indicator Target emissions reduction: N/A.
Bristol City Council_32	Introduction of EV to BCC Fleet	To demonstrate and promote the use of EV's and to highlight issues of poor air quality throughout 2015	Public procurement: Other measure	Implementation	Start date: 2014 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: No Specific indicator Target emissions reduction: N/A.
South Gloucestershire District Council_KS1	Travel Plan for Kingswood Civic Centre	Put in place a travel plan which will encourage sustainable travel and reduce car usage at the Kingswood Civic Centre.	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2012 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: . reduction in solo occupancy vehicles . increased cycling levels . increased walking levels These indicators are measured annually in the Council's travel to work survey. The 2013 survey for the first time recorded mode share by SGC office. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KS2	Parking review (Kingswood)	Review of parking issues within the AQMA.	Traffic planning and management: Management of parking places	Implementation	Start date: 2012 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: . Road safety benefits . Reduced congestion Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_KS3	Ensure air quality is a priority in development of transport schemes (Kingswood)	Introducing air quality considerations into capital programme development	Traffic planning and management: Other measure	Evaluation	Start date: 2012 Expected end date: 2013 Spatial scale: Whole town or city Source affected: Transport Indicator: Number of actions taken forward within Capital Programme Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KS4	Bus partnership (Kingswood)	Work with operators to address air quality issues through partnership working.	Public procurement: Cleaner vehicle transport services	Other	Start date: 2012 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Number of buses replaced for lower emission vehicles Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KS5	Review of Council Fleet to ensure lowest emission vehicles (Kingswood)	Set an example as the local transport authority to ensure that own fleet uses low emission vehicles as far as possible	Other measure: Other measure	Other	Start date: 2012 Expected end date: 2021 Spatial scale: Local Source affected: Transport Indicator: Reduction in vehicle emissions Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KS6	Promotion of more efficient use of taxi ranks and bus stops (Kingswood)	Programme to encourage drivers to switch off engines when stationary within AQMA.	Other measure: Other measure	Planning	Start date: 2012 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: Number of bus/taxi operators signed up to programme Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KS7	Ensure adequate landscaping is considered within new planning applications and urban designs (Kingswood)	Encourage the planting of trees and plants through the planning process.	Other measure: Other measure	Other	Start date: 2012 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Number of new trees planted. NB: Data relating to the indicator for this measure is not currently available. Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_KS8	Promotion of VOSA Smoky Vehicle Hotline (Kingswood)	Promote the VOSA Smoky Vehicle Hotline to encourage vehicles to be reported.	Public information and Education: Internet	Evaluation	<p>Start date: 2012 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: Number of vehicles reported to VOSA (if data available). N.B. VOSA has informed the Council that it does not monitor data relating to numbers of vehicles reported or their locations. Therefore the indicator for this action is no longer appropriate.</p> <p>Target emissions reduction: Target annual emission reductions have not been applied to individual actions</p>
South Gloucestershire District Council_KM1	School travel planning (Kingswood)	Ensure all schools local to the AQMA have travel plans in place to reduce car dependency at each site.	Traffic planning and management: Encouragement of shift of transport modes	Other	<p>Start date: 2012 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: The council undertakes 'hands up' surveys with pupils in schools that are engaged in the Local Sustainable Transport Fund Project. The results of these surveys shows mode share for pupils arriving at school.</p> <p>Target emissions reduction: Target annual emission reductions have not been applied to individual actions</p>
South Gloucestershire District Council_KM2	Travel planning for Kingswood Town Centre (Kingswood)	Plan to encourage more sustainable travel to Kingswood Town Centre both for residents and workers.	Traffic planning and management: Encouragement of shift of transport modes	Other	<p>Start date: 2013 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Measured by increased: . Cycling levels . Bus patronage . Walking levels See KM5 for cycling data. Global bus patronage is measured across the West of England as part of the Joint Local Transport Plan (JLTP3) Annual Progress Reports. The JLTP3 contains a target to increase patronage across the West of England by approximately 11% by 2015/16 from a 2008/09 baseline.</p> <p>Target emissions reduction: Target annual emission reductions have not been applied to individual actions</p>

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_KM3	Review bus terminals and timing points (Kingswood)	Undertake a review of the bus stops within the AQMA to reduce number of buses idling at them.	Public procurement: Cleaner vehicle transport services	Implementation	Start date: 2013 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Reduction in number of buses idling at bus stops Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KM4	Smarter Choices promotions/ roadshows (Kingswood)	Undertake promotion of sustainable travel in particular around the shopping area by holding roadshows and events where residents and workers can talk to representatives.	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2013 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Measured by increased: . Cycling levels . Bus patronage . Walking levels Also measure by number of proactive events See KM5 for cycling data and KM2 for bus patronage data. Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_KM5	Cycling infrastructure (Kingswood)	Review the current cycling provision and seek to improve access by bicycle by introducing more traffic free cycle lanes, improved on carriageway cycle provision, cycle parking and facilities where appropriate.	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Other	Start date: 2012 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Increases in numbers of cyclists. This is measured across the West of England as part of the Joint Local Transport Plan (JLTP3) Annual Progress Reports. The JLTP3 contains a target to increase cycling by 46% by 2019/20 (new baseline established for 2015/16, first reporting 2016/17). The JLTP3 monitoring is collated from a network of automatic cycle counters. The nearest relevant counters to South Gloucestershire's AQMA are located on the Bristol/Bath cycle path at Mangotsfield. The JLTP3 monitoring is collated from a network of automatic cycle counters. The nearest relevant counters to South Gloucestershire's AQMA are located on the Bristol/Bath cycle path at Mangotsfield. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KL1	ECO Stars Fleet Recognition Scheme (Kingswood)	Introduce award scheme for efficient and cleaner fleet vehicles both in house and promote to businesses within South Gloucestershire.	Other measure: Other measure	Planning	Start date: 2012 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: Membership numbers. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KL2	Car club (Kingswood)	Establish a car club with the objective to reduce car ownership levels.	Other measure: Other measure	Other	Start date: 2016 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: Car club membership Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_KL3	Restrict traffic turning movements onto A420 (Kingswood)	By restricting traffic turning onto A420 the free flow of traffic is maintained and therefore not idling which improves emissions.	Traffic planning and management: Other measure	Other	Start date: 2016 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Reduction in volume of traffic travelling towards and along A420 Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KL4	Review traffic signal numbers and operations (Kingswood)	Review implications of traffic signals and signal timings to improve traffic flows on the A420	Traffic planning and management: Other measure	Preparation	Start date: 2013 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: Improved traffic speeds and reduced congestion Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KL5	Review of delivery bays (Kingswood)	Review the designated delivery bays to reduce congestion where possible.	Traffic planning and management: Freight transport measure	Implementation	Start date: 2012 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: . number of reported issues with delivery bays . reduced congestion Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KL6	Controlled deliveries/collections (Kingswood)	Restrict deliveries/collections (e.g. waste collections) to off peak hours and explore use of freight consolidation centre with electric vehicles for delivery.	Traffic planning and management: Freight transport measure	Planning	Start date: 2016 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Number of delivery & collection agreements made with businesses Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_KL7	Reclassify strategic routes and signing strategy (Kingswood)	The main route through Kingswood AQMA is an "A" Class road. By re-classifying this to a lower road category, strategic traffic may be encouraged to use alternative routes, thereby reducing traffic volumes within the AQMA.	Traffic planning and management: Other measure	Planning	Start date: 2016 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Reduction in traffic volumes on and travelling towards A420 Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_KL8	Taxi ranks (Kingswood)	Undertake review of operations by taxis within the AQMA.	Permit systems and economic instruments: Introduction/increase of environment taxes	Preparation	Start date: 2015 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Production of review report Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_CR39/2013	Local Transport Capital Programme	Improved pedestrian crossing facilities at the High Street/Alma Road junction immediately adjacent to the AQMA.	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2015 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Implement infrastructure improvements to promote walking Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SS1	Ensure air quality is a priority in development of transport schemes (Staple Hill)	Introducing air quality considerations into capital programme development.	Traffic planning and management: Other measure	Evaluation	Start date: 2012 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: Number of actions taken forward within Capital Programme Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SS2	Bus partnership (Staple Hill)	Work with operators to address air quality issues through partnership working.	Public procurement: Cleaner vehicle transport services	Other	Start date: 2012 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Number of buses replaced for lower emission vehicles. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SS3	Review of Council Fleet to ensure lowest emission vehicles (Staple Hill)	Set an example as the authority lead to ensure that vehicles/community transport are efficient vehicles with low emissions.	Other measure: Other measure	Other	Start date: 2012 Expected end date: 2021 Spatial scale: Local Source affected: Transport Indicator: Reduction in vehicle emissions Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_SS4	Promotion of more efficient use of taxi ranks and bus stops (Staple Hill)	Education of drivers to switch off engines.	Other measure: Other measure	Planning	Start date: 2012 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: Number of bus/taxi operators signed up to programme Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SS5	Ensure adequate landscaping is considered within new planning applications and urban designs (Staple Hill)	Encourage the planting of trees and plants through the planning process.	Other measure: Other measure	Other	Start date: 2012 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Number of new trees planted. NB: Data relating to the indicator for this measure is not currently available. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SS6	Promotion of VOSA Smoky Vehicle Hotline (Staple Hill)	Promote the VOSA Smoky Vehicle Hotline to encourage older vehicles to be reported.	Public information and Education: Internet	Evaluation	Start date: 2012 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: Number of vehicles reported to VOSA (if data available). N.B. VOSA has informed the Council that it does not monitor data relating to numbers of vehicles reported or their locations. Therefore the indicator for this action is no longer appropriate. New Indicator: number of hits on the Council's Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_SM1	School travel planning (Staple Hill)	Ensure all schools local to the AQMA have travel plans in place to reduce car dependency at each site.	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: 2012 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: The council undertakes 'hands up' surveys with pupils in schools that are engaged in the Local Sustainable Transport Fund Project. The results of these surveys shows mode share for pupils arriving at school. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SM2	Travel planning for Staple Hill Town Centre	Undertake travel surveys or interviews to ascertain modes of travel particularly to the shops/workplaces. Focus will be on deliveries and visitors where parking.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2013 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: . Cycling levels . Bus patronage . Walking levels See SM6 for cycling data. Global bus patronage is measured across the West of England as part of the Joint Local Transport Plan (JLTP3) Annual Progress Reports. The JLTP3 contains a target to increase patronage across the West of England by approximately 11% by 2015/16 from a 2008/09 baseline. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SM3	Relocation of bus stops on Soundwell Road (Staple Hill)	Relocating the bus stops to more suitable positions where they do not completely stop the flow of traffic in both directions	Traffic planning and management: Other measure	Evaluation	Start date: 2012 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: Measured by relocation of bus stop Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_SM4	Parking Review (Staple Hill)	Review of parking issues within the AQMA.	Traffic planning and management: Management of parking places	Evaluation	Start date: 2012 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Measured by: . Road safety benefits . Reduced congestion Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SM5	Smarter Choices promotions /roadshows (Staple Hill)	Undertake promotion of sustainable travel in particular around the shopping areas with residents and workers by holding roadshows and events where people can talk to representatives.	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2013 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Measured by increases in number of: . Cyclists . Bus patronage Also measure by number of proactive events See SM6 for cycling data and SM2 for bus patronage data. Target emissions reduction: Target annual emission reductions have not been applied to individual actions

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_SM6	Cycling infrastructure (Staple Hill)	Review the current cycling provision and seek to improve access by bicycle by introducing more traffic free cycle lanes, improved on carriageway cycle facilities, cycle parking and facilities where appropriate.	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Preparation	<p>Start date: 2012 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Increases in numbers of cyclists. This is measured across the West of England as part of the Joint Local Transport Plan (JLTP3) Annual Progress Reports. The JLTP3 contains a target to increase cycling by 46% by 2019/20 (new baseline established for 2015/16, first reporting 2016/17). The JLTP3 monitoring is collated from a network of automatic cycle counters. The nearest relevant counters to South Gloucestershire's AQMA are located on the Bristol/Bath cycle path at Mangotsfield. The JLTP3 monitoring is collated from a network of automatic cycle counters. The nearest relevant counters to South Gloucestershire's AQMA are located on the Bristol/Bath cycle path at Mangotsfield.</p> <p>Target emissions reduction: Target annual emission reductions have not been applied to individual actions</p>
South Gloucestershire District Council_SL1	ECO Stars Fleet Recognition Scheme (Staple Hill)	Introduce award scheme for efficient and cleaner fleet vehicles both in house and promote to businesses within South Gloucestershire.	Other measure: Other measure	Other	<p>Start date: 2012 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Measured by membership numbers.</p> <p>Target emissions reduction: Target annual emission reductions have not been applied to individual actions</p>
South Gloucestershire District Council_SL2	Car club (Staple Hill)	Establish a car club with the objective to reduce car ownership levels.	Other measure: Other measure	Planning	<p>Start date: 2016 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: Measured by car club membership.</p> <p>Target emissions reduction: Target annual emission reductions have not been applied to individual actions</p>

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_SL3	Review traffic signal numbers and operations (Staple Hill)	Review implications of traffic signals and signal timings to improve traffic flows through Staple Hill	Traffic planning and management: Other measure	Evaluation	Start date: 2012 Expected end date: 2014 Spatial scale: Local Source affected: Transport Indicator: Measured by improved traffic speeds. Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SL4	Review of delivery bays (Staple Hill)	Review the designated delivery bays to reduce congestion where possible.	Traffic planning and management: Freight transport measure	Other	Start date: 2012 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: Measured by . number of reported issues with delivery bays . Reduced congestion Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SL5	Restrict traffic turning movements at A4017 junction (Staple Hill)	By restricting traffic turning at A4017, the free flow of traffic is maintained and therefore not idling which improves emissions.	Traffic planning and management: Other measure	Evaluation	Start date: 2016 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Measured by reduction in traffic volumes at A4017 junction Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SL6	Controlled deliveries/collections (Staple Hill)	Restrict deliveries/collections (e.g. waste collections) to off peak hours and explore use of freight consolidation centre with electric vehicles for delivery.	Traffic planning and management: Freight transport measure	Planning	Start date: 2016 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Measured by number of delivery & collection agreements made with businesses Target emissions reduction: Target annual emission reductions have not been applied to individual actions
South Gloucestershire District Council_SL7	Reclassify strategic routes and signing strategy (Staple Hill)	By reclassifying the routes it would reroute strategic traffic and therefore reduce the traffic volumes.	Traffic planning and management: Other measure	Planning	Start date: 2016 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: Measured by reduction in traffic volumes on and travelling towards A4017. Target emissions reduction: Target annual emission reductions have not been applied to individual actions