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# Air Quality Plan for the achievement of EU air quality limit values for nitrogen dioxide ($NO_2$) in The Potteries (UK0014)

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Llywodraeth Cymru
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# Contents

# 1. Introduction

## 1.1. This document

This document is the The Potteries (UK0014) air quality plan for the achievement of the EU air quality limit values for nitrogen dioxide ($NO_2$).

This plan presents the following information:

- General information regarding the The Potteries agglomeration zone
- Details of $NO_2$ exceedence situation(s) within the The Potteries 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 Potteries should be read in conjunction with the separate UK overview document and the list of UK and national measures that are available on the Defra website (http://www.defra.gov.uk/environment/quality/air/air-quality/eu/). The UK overview document sets out, amongst other things, the authorities responsible for delivering air quality improvements and the national measures that are applied in some or all UK zones. The measures presented in this plan and the accompanying UK overview and list of UK measures show how the UK will ensure that compliance with the $NO_2$ limit values is achieved as soon as possible.

This plan should also be read in conjunction with the supporting UK technical report (http://www.defra.gov.uk/environment/quality/air/air-quality/eu/), which presents information on assessment methods, input data and emissions inventories used in the analysis presented in this plan.

## 1.2. Context

Two $NO_2$ limit values for the protection of human health have been set in the Air Quality Directive (2008/50/EC). These are:

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

The Air Quality Directive stipulates that compliance with the $NO_2$ limit values will be achieved by 01/01/2010. However, where the limit values cannot be achieved by then, the Directive also allows Member States to postpone this attainment date until 01/01/2015 provided air quality plans are established demonstrating how the limit values will be met by this extended deadline.

## 1.3. Zone status

The assessment undertaken for the The Potteries agglomeration zone indicates that the annual limit value is likely to be exceeded in 2010 and in 2015 but achieved by 2020 through introduction of measures included in the baseline modelling, a low emission zone (LEZ) scenario (if applied) and the non-quantifiable local measures outlined in this plan.

The assessment undertaken for the The Potteries agglomeration zone indicates that the hourly limit value not exceeded in this agglomeration zone in 2008.

## 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 $NO_2$ levels in this agglomeration zone for the 2008 reference year of this air quality plan. This includes the 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 2010 is given in section 4.

Baseline modelled projections for 2010, 2015 and 2020 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 take the measure(s). However, it has not been possible to quantify the impact of all 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.

Details of an LEZ scenario under consideration as part of our investigation of additional measures to achieve the $NO_2$ limit values is presented in section 6.

# 2. General Information about the Zone

## 2.1. Administrative information

Zone name: The Potteries
Zone code: UK0014
Type of zone: agglomeration zone
Reference year: 2008
Extent of zone: Figure 1 shows the area covered by the The Potteries agglomeration zone

Local Authorities within the agglomeration 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 this list correspond to the numbers in Figure 2.

Cheshire East Council (formerly 1. Congleton District Council)
2. Newcastle under Lyme Borough Council
3. Stafford Borough Council
4. Staffordshire Moorlands District Council
5. Stoke on Trent City 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 The Potteries agglomeration zone (UK0014).**

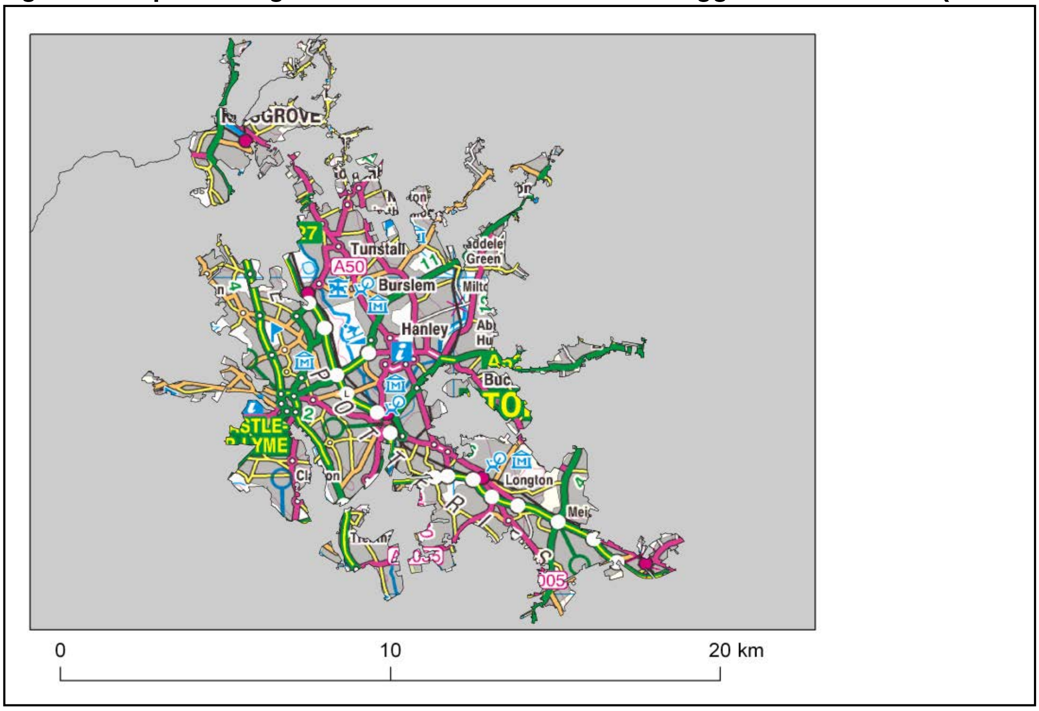





**Figure 2. Map showing Local Authorities within the The Potteries agglomeration zone (UK0014).**

## 2.2. Assessment details

**Measurements**
$NO_2$ measurements in this zone were available in 2008 from the following national network monitoring stations ($NO_2$ data capture for each station in 2008 shown in brackets):

• Stoke-on-Trent Centre GB0658A (96.5%)

Full details of monitoring stations within the The Potteries agglomeration zone are available from http://uk-air.defra.gov.uk/networks/network-info?view=aurn.

**Modelling**
Modelling for the 2008 reference year has been carried out for the whole of the UK (see the UK technical report). This modelling covers the following extent within this zone:

• Total background area within zone (approx): 91 $km^2$
• Total population within zone (approx): 266188 people
• Total road length where an assessment of $NO_2$ concentrations have been made: 129 km in 2008 (and similar lengths in previous years).

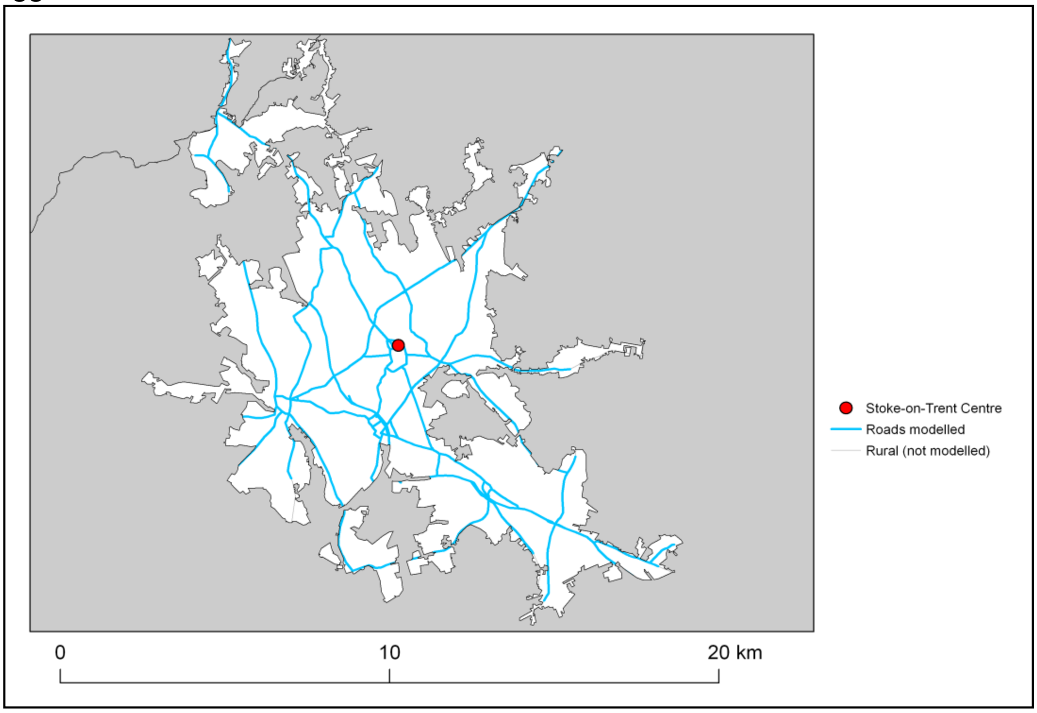
**Zone maps**
Figure 3 presents the location of the $NO_2$ monitoring stations within this zone for 2008 and the roads for which $NO_2$ concentrations have been modelled. $NO_2$ concentrations at background locations have been modelled across the entire zone at a 1 x 1 $km^2$ resolution.

## 2.3. Reporting Under European Directives

Since 2001 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

In addition, the UK has reported on air quality plans and programmes (Decision 2004/224/EC) on an annual basis depending on the reported concentrations in the previous year. Plans and programmes were first reported in this zone in 2003. Plans and programmes for 2003 and all other years for which they have been required are available from http://cdr.eionet.europa.eu/gb/eu/aqpp.

**Figure 3. Map showing the location of the $NO_2$ monitoring sites with valid data in 2008 and roads where concentrations have been modelled within the The Potteries (UK0014) agglomeration zone.**



# 3. Overall Picture for 2008 reference year

## 3.1. Introduction

There are two limit values for the protection of health for $NO_2$. These are:

• The annual limit value (annual mean concentration of no more than 40 $\mu gm^{-3}$)
• The hourly limit value (no more than 18 hourly exceedances of 200 $\mu gm^{-3}$ in a calendar year)

Within the The Potteries agglomeration zone only the annual limit value was exceeded in 2008. Hence, one exceedance situation for this zone has been defined, $NO_2$_UK0014_Annual_1, which covers the exceedance of the annual limit value. This exceedance situation is described below.

For both $NO_2$ limit values, a margin of tolerance for 2008 and other years has been defined in the Air Quality Directive (2008/50/EC). Data comparing assessed concentrations at locations within this agglomeration zone with the 2008 margin of tolerance are presented in the annual reporting questionnaire for 2008 (http://cdr.eionet.europa.eu/gb/eu/annualair).

## 3.2. Reference year: $NO_2$_UK0014_Annual_1

The $NO_2$_UK0014_Annual_1 exceedance situation covers all exceedances of the annual mean limit value in the The Potteries agglomeration zone in 2008.

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 mean 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 2008. Table 2 summarises modelled annual mean $NO_2$ results in this exceedance situation for the same time period. This table shows that, in 2008, 23 km of road length was modelled to exceed the annual limit value. There were no modelled background exceedances of this limit value. Table 2 also shows that the maximum modelled annual mean $NO_2$ concentration in 2008 was 80.9 $\mu gm^{-3}$. Maps showing the modelled annual mean $NO_2$ concentrations for 2008 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 these maps.

The maximum measured concentration in the zone varies due to changes 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.

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, along with an indicative annual mean $NO_2$ source apportionment. Table 3 presents summary source apportionment information in this exceedance situation for 2008, including:

• The modelled $NO_X$ and indicative $NO_2$ source apportionment for the section of road with the highest modelled $NO_2$ concentration in this exceedance situation in 2008. This is important information because it shows which sources need to be tackled at the point with the largest compliance gap in the exceedance situation. It is not possible to calculate an unambiguous source apportionment for annual mean $NO_2$ concentrations for the reasons discussed in the UK Technical Report. We have, however, developed a method to provide an indicative source apportionment for annual mean $NO_2$ concentrations for these air quality plans. This method involves calculating the maximum and minimum possible contribution from each source to the $NO_2$ concentration. The final source apportionment has been calculated as the average of the minimum and maximum contributions for each source, with the results normalised so that the contributions sum to the total modelled $NO_2$ concentration. Further information on the methods used for source apportionment are provided in the UK Technical Report.

• The maximum $NO_X$ contribution from each source from across all the roads included in this exceedance situation in 2008. This is important information because it highlights all the key sources that need to be tackled within the exceedance situation in order to achieve compliance across the entire area of the exceedance situation.

Figure A1.1 in Annex 1 presents the annual mean $NO_X$ source apportionment for each section of road within the $NO_2$_UK0014_Annual_1 exceedance situation (i.e. the source apportionment for all exceeding roads only) in 2008. Roads have been grouped into motorways, trunk roads and primary road in this figure.

**Table 1. Measured annual mean concentrations at national network stations in $NO_2$_UK0014_Annual_1 for 2001 onwards, $\mu gm^{-3}$. (Data capture shown in brackets) (a)**

| Site name (EOI code) | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| Stoke-on-Trent Centre (GB0658A) | 33 (97%) | 30 (96%) | 31 (95%) | 30 (93%) | 33 (96%) | 32 (93%) | 26 (97%) | 26 (97%) | 30 (91%) |

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

**Table 2. Annual mean $NO_2$ model results in $NO_2$_UK0014_Annual_1 for 2001 onwards**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| Road length exceeding (km) | 61.3 | 25.1 | 50.9 | 30.2 | 32.9 | 29.0 | 34.0 | 23.0 | 20.7 |
| Background area exceeding ($km^2$) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum modelled concentration ($\mu gm^{-3}$) (a) | 73.1 | 63.6 | 75.7 | 77.3 | 85.2 | 77.9 | 79.5 | 80.9 | 86.3 |

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

**Table 3. Source apportionment summary information for 2008 in $NO_2$_UK0014_Annual_1 (µgm$^{-3}$).**

| Spatial scale | Component | Highest road link (a) | | Maximum (b) |
|---|---|---|---|---|
| | | NOx | NO2 (d) | NOx |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | Total | 7.8 | (c) | |
| | From within the UK | 4.6 | (c) | 4.6 |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | (c) | 3.2 |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | Total | 34.2 | 16.5 | - |
| | From road traffic sources | 12.0 | 11.5 | 17.4 |
| | From industry (including heat and power generation) | 9.5 | (c) | 17.4 |
| | From agriculture | 0.0 | (c) | 0.0 |
| | From commercial/residential sources | 4.7 | (c) | 7.1 |
| | From shipping | 0.0 | (c) | 0.0 |
| | From off road mobile machinery | 7.1 | (c) | 13.5 |
| | From natural sources | 0.0 | (c) | 0.0 |
| | From transboundary sources | 0.0 | (c) | 0.0 |
| | From other urban background sources | 0.8 | (c) | 1.4 |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | Total | 160.9 | 64.4 | - |
| | From cars | 47.3 | 18.4 | 48.2 |
| | From HGV rigid | 29.9 | 12 | 30.2 |
| | From HGV articulated | 62.6 | 24.2 | 72.7 |
| | From Buses | 3.7 | 1.5 | 18.3 |
| | From LGVs | 17.2 | 8.3 | 17.2 |
| | From motorcycles | 0.2 | 0.1 | 0.3 |
| Total (i.e. regional background + urban background + local components) | | 202.9 | 80.9 | - |

(a) The road with the highest modelled annual mean $NO_2$ concentration in this exceedance situation in 2008 is a section of the A50, traffic count point id 75422 (OS grid (m): 391150, 343030).
(b) This column gives the maximum contribution for each component from all the roads included in the exceedence situation.
(c) The combined modelled annual mean $NO_2$ concentration contribution for these components is 5 µgm$^{-3}$. A more detailed $NO_2$ source apportionment is currently unavailable for these sectors.
(d) Source apportionment for $NO_2$ is indicative, see UK Technical Report.

**Figure 4. Map of modelled background annual mean $NO_2$ concentrations 2008. Modelled exceedances of the annual limit value are shown in orange and red.**

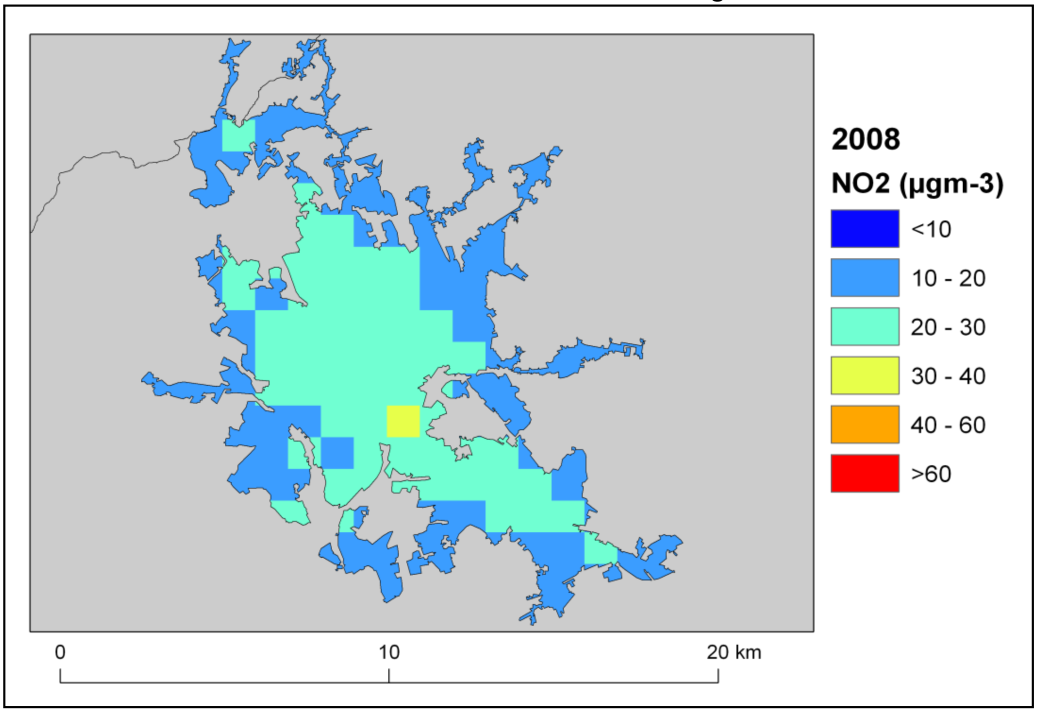
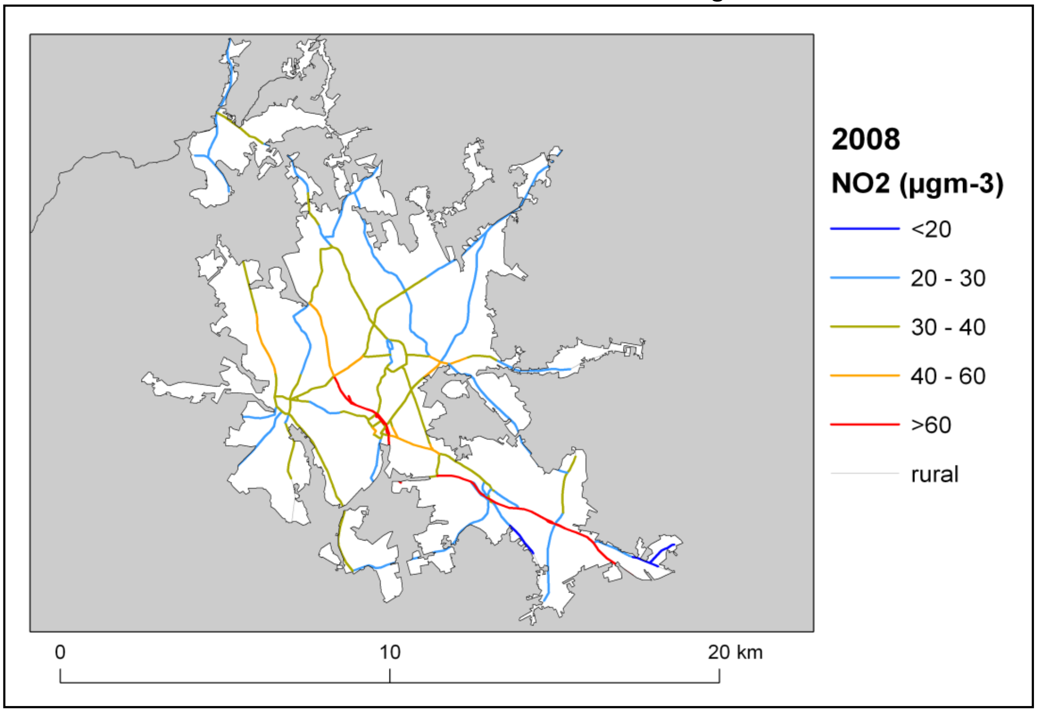





**Figure 5. Map of modelled roadside annual mean $NO_2$ concentrations 2008. Modelled exceedances of the annual limit value are shown in orange and red.**



# 4. Measures

## 4.1. Introduction

This section (section 4) gives details of measures that address exceedances of the $NO_2$ limit values within The Potteries 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 $NO_2$ exceedance situation(s) 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 articulated HGVs at the location of maximum exceedance with a contribution of 62.6 $ugm^{-3}$ of $NO_X$ out of a total of 202.9 $ugm^{-3}$ of $NO_X$. Articulated HGVs, cars and rigid HGVs were important sources on the trunk roads with the highest concentrations. Cars and on some roads 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 may also be beneficial depending on the source apportionment for the urban background.

## 4.3. Measures

Measures potentially affecting $NO_2$ 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 and list of UK and National measures.

Relevant Local Authority measures within this exceedance situation are listed in Table A2.1 (see Annex 2). Relevant Local Authority measures are considered to be those measures which directly target, or are in close geographical proximity to roads and/or background grid squares in exceedance of one or other of the $NO_2$ limit values. Other Local Authority measures may also have been taken in this zone, but they are not listed in this table. All the measures listed in Table A2.1 have been carried out, are in the process of being carried out or a firm commitment had been made to carry them out on the timetables listed at the point at which information on local measures was collected.

## 4.4. Measures timescales

Timescales for national measures are given in the UK overview document and list of UK and National measures.

Information on local measures was collected in autumn 2009. Hence, any Local Authority action plans and measures adopted by Local Authorities after this time have not been included in this air quality plan. Many of the measures listed in Annex 2 will either have happened before autumn 2009 or have been planned for implementation before or during 2010. Others will be planned for after 2010. It should be noted that many of the measures taken before or during 2010 will continue to have a beneficial impact on air quality after the end of 2010.

Local Authorities report on progress with the implementation of their action plans annually and review action plan measures regularly. Where future Local Authority measures to improve air quality are under consideration these would be included in future local authority action plans and published by the local authority.

# 5. Baseline Model Projections

## 5.1. Overview of model projections

**Baseline projections for 2010**
Model projections for 2010, starting from the 2008 reference year described in section 3, have been calculated in order to determine whether compliance with the $NO_2$ limit values is likely to be achieved for each exceedance situation by the original deadline for compliance of 01/01/2010. Details of the methods used for the baseline emissions and concentration projections modelling are provided in the 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 2007 (used as a basis for the compilation of the emission inventory) or in the traffic activity projections to 2010 and beyond (used to calculate the emission 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.

A number of the local measures in Table A2.1 can be considered to be 'smarter choices' measures (see http://www.dft.gov.uk/pgr/sustainable/smarterchoices/ctwwt/ for a detailed description of this type of measure). We have quantified the impact of this group of measures on a national scale within the projections. Details of how this has been done can be found in the UK technical report. Table A2.1 indicates which local measures we have considered to be 'smarter choices'.

**Baseline projections for 2015**
Model projections for 2015, starting from the 2008 reference year described above, have been calculated in order to determine whether compliance with the $NO_2$ limit values is likely to be achieved for each exceedance situation by the revised deadline for compliance of 01/01/2015 on the basis of EU-wide measures and the measures currently planned. This modelling is described in detail in the UK technical report. Many of the measures listed in annex 2 of this document and the supporting list of UK and national measures will continue or will continue to have an impact beyond the original deadline for compliance of 01/01/2010.

## 5.2. Baseline projections: $NO_2$_UK0014_Annual_1

Table 4 presents summary results for the baseline model projections for 2010, 2015 and 2020 for the $NO_2$_UK0014_Annual_1 exceedance situation. This shows that the maximum modelled annual mean $NO_2$ concentration predicted for 2010 in this exceedance situation is 69.3 $\mu gm^{-3}$. By 2015, the maximum modelled annual mean $NO_2$ concentration is predicted to drop to 45.8 $\mu gm^{-3}$. Hence, the model results suggest that compliance with the $NO_2$ annual limit value is unlikely to be achieved by 2015 under baseline conditions in this exceedance situation.

The projected modelled $NO_X$ and indicative $NO_2$ annual mean source apportionments for 2010, 2015 and 2020 at the location with the biggest compliance gap in 2008 are presented in Table 5. In 2010 and 2015, the model results suggest that this location will continue to have the highest annual mean $NO_2$ concentration within this exceedance situation. However, in 2020 the model indicates that the location with the highest annual mean $NO_2$ concentration within this exceedance situation will be elsewhere. Information regarding the new location with the highest $NO_2$ concentration, including the source apportionment is given in Table 6. The locations of maximum concentration in each year are given in the footnote to this table. This source apportionment information is useful because it shows which sources need to be tackled at the point with the largest compliance gap in the exceedance situation.

Table 7 shows the maximum $NO_X$ contribution from each source apportionment component from any road across the whole exceedance situation. This source apportionment information is useful because it highlights all the key sources that need to be tackled within the exceedance situation in order to achieve compliance across the entire area of the exceedance situation. It should be noted that this table only includes roads which continue to be in exceedance in the relevant year. Hence, for example, the road with the largest contribution from cars in 2010 may no longer be included in the table in 2015 if the road is predicted to be compliant in 2015.

Figures 6 and 7 show maps of projected annual mean $NO_2$ concentrations in 2010, 2015 and 2020 at background and roadside locations respectively. Maps for 2008 are also presented here for reference.

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

**Table 4. Annual mean $NO_2$ model results in $NO_2$_UK0014_Annual_1**

| | 2008 | 2010 | 2015 | 2020 |
|---|---|---|---|---|
| Road length exceeding (km) | 23.0 | 18.3 | 8.3 | 0.0 |
| Background area exceeding ($km^2$) | 0 | 0 | 0 | 0 |
| Maximum modelled concentration ($\mu gm^{-3}$) (a) | 80.9 | 69.3 | 45.8 | 28.2 |

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

**Table 5. Modelled source apportionment for 2010, 2015 and 2020 under baseline conditions for traffic count point 75422 on the A50 (the road section with the maximum modelled annual mean $NO_2$ concentration in 2008 in $NO_2$_UK0014_Annual_1. OS grid (m): 391150, 343030). 2008 results are also presented here for reference (units: $\mu gm^{-3}$).**

| Spatial scale | Component | NOx | | | | NO2 (indicative) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2008 | 2010 | 2015 | 2020 | 2008 | 2010 | 2015 | 2020 |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | Total | 7.8 | 6.7 | 5.8 | 4.7 | (a) | (b) | (c) | (d) |
| | From within the UK | 4.6 | 4.0 | 3.5 | 2.8 | (a) | (b) | (c) | (d) |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | 2.7 | 2.4 | 1.9 | (a) | (b) | (c) | (d) |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | Total | 34.2 | 29.0 | 21.9 | 18.0 | 16.5 | 14.5 | 12.1 | 10.8 |
| | From road traffic sources | 12.0 | 8.5 | 5.5 | 3.4 | 11.5 | 10.8 | 9.5 | 9.1 |
| | From industry (including heat and power generation) | 9.5 | 8.4 | 8.0 | 7.6 | (a) | (b) | (c) | (d) |
| | From agriculture | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From commercial/residential sources | 4.7 | 4.7 | 4.3 | 3.9 | (a) | (b) | (c) | (d) |
| | From shipping | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From off road mobile machinery | 7.1 | 6.7 | 3.5 | 2.5 | (a) | (b) | (c) | (d) |
| | From natural sources | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From transboundary sources | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From other urban background sources | 0.8 | 0.6 | 0.6 | 0.6 | (a) | (b) | (c) | (d) |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | Total | 160.9 | 131.1 | 74.5 | 34.6 | 64.4 | 54.7 | 33.7 | 17.1 |
| | From cars | 47.3 | 31.8 | 21.9 | 14.6 | 18.4 | 13.3 | 10.1 | 7.3 |
| | From HGV rigid | 29.9 | 26.6 | 13.7 | 4.9 | 12.0 | 10.9 | 6.0 | 2.3 |
| | From HGV articulated | 62.6 | 54.5 | 27.5 | 9.0 | 24.2 | 21.7 | 11.9 | 4.3 |
| | From Buses | 3.7 | 3.3 | 1.9 | 0.9 | 1.5 | 1.4 | 0.9 | 0.4 |
| | From LGVs | 17.2 | 14.7 | 9.3 | 5.1 | 8.3 | 7.4 | 4.9 | 2.8 |
| | From motorcycles | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| Total (i.e. regional background + urban background + local components) | | 202.9 | 166.8 | 102.3 | 57.3 | 80.9 | 69.3 | 45.8 | 27.9 |

(a) The total annual mean $NO_2$ contribution for all components labelled (a) in 2008 was modelled to be 5 $\mu gm^{-3}$.
(b) The total annual mean $NO_2$ contribution for all components labelled (b) in 2010 is predicted to be 3.7 $\mu gm^{-3}$.
(c) The total annual mean $NO_2$ contribution for all components labelled (c) in 2015 is predicted to be 2.6 $\mu gm^{-3}$.
(d) The total annual mean $NO_2$ contribution for all components labelled (d) in 2020 is predicted to be 1.7 $\mu gm^{-3}$.

**Table 6. Modelled source apportionment for 2010, 2015 and 2020 under baseline conditions for traffic count point with the highest concentration in these years in $NO_2$_UK0014_Annual_1 (a). 2008 results are also presented here for reference (units: $\mu gm^{-3}$).**

| Spatial scale | Component | NOx | | | | NO2 (indicative) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2008 | 2010 | 2015 | 2020 | 2008 | 2010 | 2015 | 2020 |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | Total | 7.8 | 6.7 | 5.8 | 4.6 | (b) | (c) | (d) | (e) |
| | From within the UK | 4.6 | 4.0 | 3.5 | 2.7 | (b) | (c) | (d) | (e) |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | 2.7 | 2.4 | 1.9 | (b) | (c) | (d) | (e) |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | Total | 34.2 | 29.0 | 21.9 | 29.0 | 16.5 | 14.5 | 12.1 | 15.8 |
| | From road traffic sources | 12.0 | 8.5 | 5.5 | 4.0 | 11.5 | 10.8 | 9.5 | 13.8 |
| | From industry (including heat and power generation) | 9.5 | 8.4 | 8.0 | 13.8 | (b) | (c) | (d) | (e) |
| | From agriculture | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From commercial/residential sources | 4.7 | 4.7 | 4.3 | 5.4 | (b) | (c) | (d) | (e) |
| | From shipping | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From off road mobile machinery | 7.1 | 6.7 | 3.5 | 4.8 | (b) | (c) | (d) | (e) |
| | From natural sources | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From transboundary sources | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From other urban background sources | 0.8 | 0.6 | 0.6 | 0.9 | (b) | (c) | (d) | (e) |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | Total | 160.9 | 131.1 | 74.5 | 25.2 | 64.4 | 54.7 | 33.7 | 12.4 |
| | From cars | 47.3 | 31.8 | 21.9 | 10.1 | 18.4 | 13.3 | 10.1 | 5.0 |
| | From HGV rigid | 29.9 | 26.6 | 13.7 | 4.7 | 12.0 | 10.9 | 6.0 | 2.2 |
| | From HGV articulated | 62.6 | 54.5 | 27.5 | 4.8 | 24.2 | 21.7 | 11.9 | 2.2 |
| | From Buses | 3.7 | 3.3 | 1.9 | 1.1 | 1.5 | 1.4 | 0.9 | 0.5 |
| | From LGVs | 17.2 | 14.7 | 9.3 | 4.4 | 8.3 | 7.4 | 4.9 | 2.3 |
| | From motorcycles | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| Total (i.e. regional background + urban background + local components) | | 202.9 | 166.8 | 102.3 | 58.8 | 80.9 | 69.3 | 45.8 | 28.2 |

(a) The road with the maximum annual mean $NO_2$ concentration in different years is as follows. 2008: A section of the A50 (count point id 75422 ). 2010: A section of the A50 (count point id 75422 ). 2015: A section of the A50 (count point id 75422 ). 2020: A section of the A500 (count point id 8340 ). (OS grid (m): 391150, 343030; 391150, 343030; 391150, 343030; 391150, 343030).
(b) The total annual mean $NO_2$ contribution for all components labelled (b) in 2008 was modelled to be 5 $\mu gm^{-3}$.
(c) The total annual mean $NO_2$ contribution for all components labelled (c) in 2010 is predicted to be 3.7 $\mu gm^{-3}$.
(d) The total annual mean $NO_2$ contribution for all components labelled (d) in 2015 is predicted to be 2.6 $\mu gm^{-3}$.
(e) The total annual mean $NO_2$ contribution for all components labelled (e) in 2020 is predicted to be 2 $\mu gm^{-3}$.

**Table 7. The maximum $NO_X$ contribution from each source from across all the roads included in the exceedance situation on which exceedances remain in 2010, 2015 and 2020 under baseline conditions. Zeros indicate that there are no exceedances in the relevant year.**

| Spatial scale | Component | NOx | | | |
|---|---|---|---|---|---|
| | | 2008 | 2010 | 2015 | 2020 |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | From within the UK | 4.6 | 4.0 | 3.5 | 0.0 |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | 2.7 | 2.4 | 0.0 |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | From road traffic sources | 17.4 | 12.8 | 7.6 | 0.0 |
| | From industry (including heat and power generation) | 17.4 | 15.3 | 14.5 | 0.0 |
| | From agriculture | 0.0 | 0.0 | 0.0 | 0.0 |
| | From commercial/residential sources | 7.1 | 7.1 | 6.6 | 0.0 |
| | From shipping | 0.0 | 0.0 | 0.0 | 0.0 |
| | From off road mobile machinery | 13.5 | 12.7 | 6.7 | 0.0 |
| | From natural sources | 0.0 | 0.0 | 0.0 | 0.0 |
| | From transboundary sources | 0.0 | 0.0 | 0.0 | 0.0 |
| | From other urban background sources | 1.4 | 0.9 | 0.9 | 0.0 |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | From cars | 48.2 | 32.3 | 22.3 | 0.0 |
| | From HGV rigid | 30.2 | 26.9 | 13.7 | 0.0 |
| | From HGV articulated | 72.7 | 63.2 | 31.8 | 0.0 |
| | From Buses | 18.3 | 15.5 | 3.8 | 0.0 |
| | From LGVs | 17.2 | 14.7 | 9.3 | 0.0 |
| | From motorcycles | 0.3 | 0.3 | 0.2 | 0.0 |

**Figure 6. Background baseline projections of annual mean $NO_2$ concentrations in 2010, 2015 and 2020. 2008 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.**

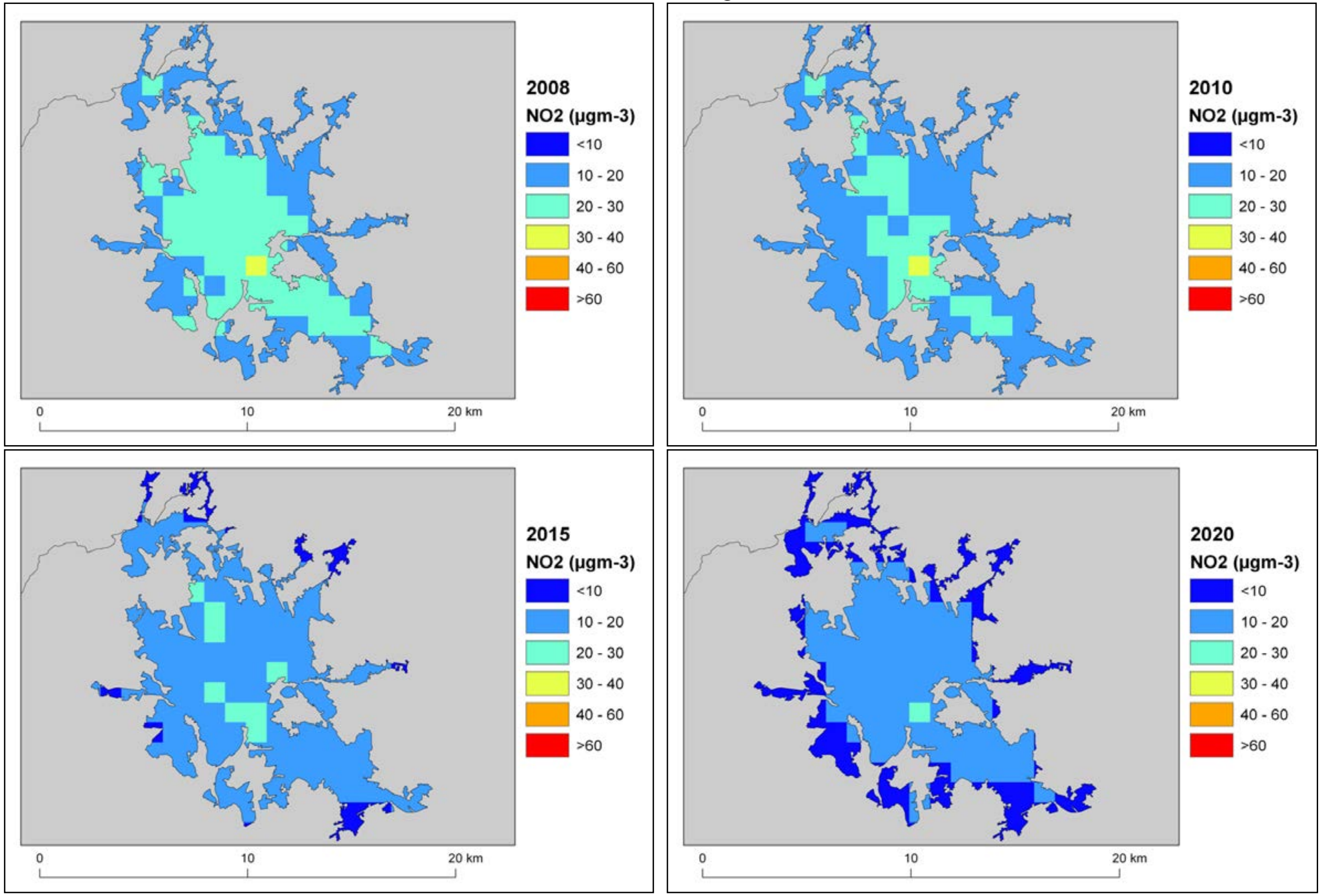
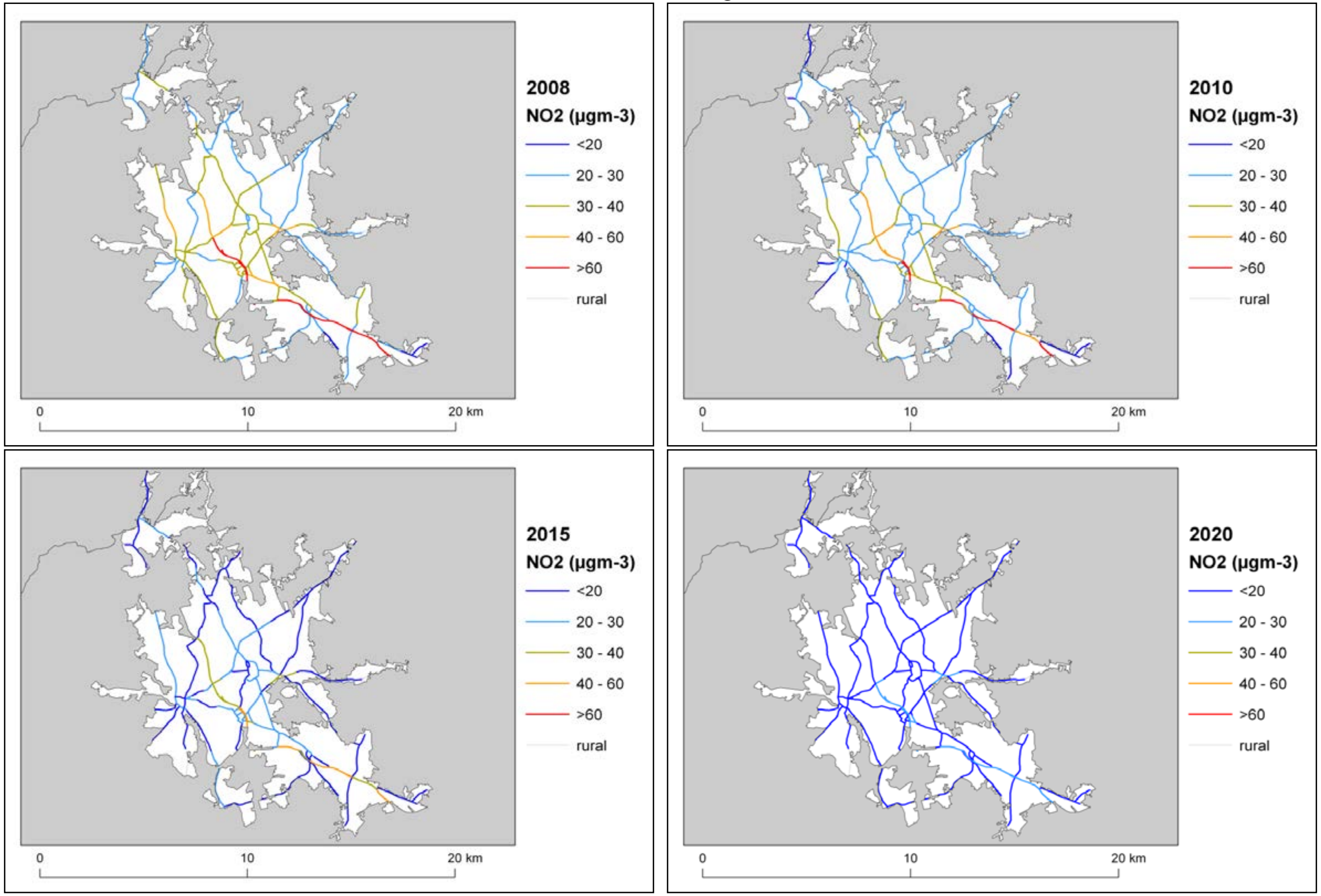


**Figure 7. Roadside baseline projections of annual mean $NO_2$ concentrations in 2010, 2015 and 2020. 2008 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.**



# 6. Projections including the impact of the low emissions zone (LEZ) scenario

## 6.1. Overview of model projections

Further model projections for 2015 and 2020 have also been calculated that include the impact of the LEZ scenario. This scenario is under consideration as part of our investigation of additional measures to achieve the $NO_2$ limit values. The scenario modelled here would require all HGVs and buses to meet at least Euro IV emission standards for $NO_X$ and $PM_{10}$ in 2015 in order to travel on roads other than the strategic long distance road network within the selected Local Authority boundaries. More details of the work underway to explore the feasibility and costs of a national LEZ framework are provided in the UK overview document and a description of the modelling assumptions included in the LEZ scenario is available in the UK technical report.

The LEZ scenario has been modelled for this zone because initial screening work indicated that, should it be applied, it would be effective at either reducing the gap to or achieving compliance with the limit value. The model results for these projections are presented in this section.

Further work is underway to investigate the feasibility and practicality of a national framework for LEZ as an additional measure to reduce concentrations of $NO_2$. These investigations include:

• the likely effectiveness of any scheme at controlling air pollutant emissions and delivering increased compliance with European air quality standards within the timescales specified by the EU Ambient Air Quality Directive;
• the effectiveness and reliability of available $NO_X$ abatement equipment, taking into account evidence on the performance of Euro standards;
• the cost and resource such a measure might place upon national and/or local government;
• administrative and enforcement considerations for the scheme and the implications of this for Government Executive Agencies;
• the likely take-up of the scheme by local authorities and others;
• how any scheme would relate to ongoing certification work at EU and UNECE level.

These investigations will continue over the coming months and decisions will be made following the investigation as to whether or not it is feasible to introduce a national LEZ Framework and the details of any scheme. Should a local authority decide to introduce an LEZ, final decisions on the nature and extent of such a measure would be for the local authority to make taking into account local circumstances and any national arrangements put in place. These might not reflect what has been modelled in the scenario.

The LEZ scenario examines the impact of a LEZ applied within the selected local authorities listed in the supporting technical report. The local authorities relevant to this zone are

• Stoke on Trent City Council

The impact of the LEZ scenario on projected $NO_2$ concentrations in 2015 will be greatest in these local authorities. There are also expected to be smaller benefits in other areas as a result of the changes to the national HGV fleets required to ensure LEZ compliance within the LEZ locations. The impact of these fleet changes on projected $NO_2$ concentrations in 2015 have been assessed in all zones for which the baseline projections do not show compliance with the annual mean limit value in 2015.

## 6.2. LEZ scenario projections: $NO_2$_UK0014_Annual_1

Table 8 presents summary results for the LEZ scenario model projections for 2015 and 2020 for the $NO_2$_UK0014_Annual_1 exceedance situation. This shows that the maximum modelled annual mean $NO_2$ concentration predicted for 2015 for the LEZ scenario in this exceedance situation is 44.9 $\mu gm^{-3}$. Hence, the model results suggest that compliance with the $NO_2$ annual limit value is unlikely to be achieved by 2015 for the LEZ scenario in this exceedance situation. The model results do, however, show that the $NO_2$ annual mean limit value is likely to be achieved in this exceedance situation in 2020, when the maximum modelled annual mean $NO_2$ concentration predicted to be 28.1 $\mu gm^{-3}$.

The projected modelled $NO_X$ and indicative $NO_2$ annual mean source apportionments for 2010, 2015 and 2020 at the location with the biggest compliance gap in 2008 are presented in Table 9. In 2010 and 2015, the model results suggest that this location will continue to have the highest annual mean $NO_2$ concentration within this exceedance situation. However, in 2020 the model indicates that the location with the highest annual mean $NO_2$ concentration within this exceedance situation will be elsewhere. Information regarding the new location with the highest $NO_2$ concentration, including the source apportionment is given in Table 10. The locations of maximum concentration in each year are given in teh footnote to this table. This source apportionment information is useful because it shows which sources need to be tackled at the point with the largest compliance gap in the exceedance situation.

Table 11 shows the maximum $NO_X$ contribution from each source apportionment component from any road across the whole exceedance situation. This source apportionment information is useful because it highlights all the key sources that need to be tackled within the exceedance situation in order to achieve compliance across the entire area of the exceedance situation. It should be noted that this table only includes roads that continue to be in exceedance in the relevant year. Hence, for example, the road with the largest contribution from cars in 2010 may no longer be included in the table in 2015 if the road is predicted to be compliant in 2015.

Figures 8 and 9 show maps of projected annual mean $NO_2$ concentrations for the LEZ scenario in 2015 and 2020 at background and roadside locations respectively. Maps for 2008 and baseline projections for 2010 are also presented here for reference.

**Table 8. Annual mean $NO_2$ model results in $NO_2$_UK0014_Annual_1. 2015 and 2020 results are for the LEZ scenario. Results for 2008 and baseline projections for 2010 are also shown**

| | 2008 | 2010 | 2015 | 2020 |
|---|---|---|---|---|
| Road length exceeding (km) | 23.0 | 18.3 | 8.3 | 0.0 |
| Background area exceeding ($km^2$) | 0 | 0 | 0 | 0 |
| Maximum modelled concentration ($\mu gm^{-3}$) (a) | 80.9 | 69.3 | 44.9 | 28.1 |

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

**Table 9. Modelled source apportionment for 2015 and 2020 for the LEZ scenario for traffic count point 75422 on the A50 (the road section with the maximum modelled annual mean $NO_2$ concentration in 2008 in $NO_2$_UK0014_Annual_1 OS grid (m): 391150, 343030). 2008 and 2010 baseline projections results are also presented here for reference (units: $\mu gm^{-3}$).**

| Spatial scale | Component | NOx | | | | NO2 (indicative) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2008 | 2010 | 2015 | 2020 | 2008 | 2010 | 2015 | 2020 |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | Total | 7.8 | 6.7 | 5.8 | 4.7 | (a) | (b) | (c) | (d) |
| | From within the UK | 4.6 | 4.0 | 3.4 | 2.8 | (a) | (b) | (c) | (d) |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | 2.7 | 2.4 | 1.9 | (a) | (b) | (c) | (d) |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | Total | 34.2 | 29.0 | 21.4 | 17.9 | 16.5 | 14.5 | 11.9 | 10.8 |
| | From road traffic sources | 12.0 | 8.5 | 5.0 | 3.3 | 11.5 | 10.8 | 9.5 | 9.1 |
| | From industry (including heat and power generation) | 9.5 | 8.4 | 8.0 | 7.6 | (a) | (b) | (c) | (d) |
| | From agriculture | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From commercial/residential sources | 4.7 | 4.7 | 4.3 | 3.9 | (a) | (b) | (c) | (d) |
| | From shipping | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From off road mobile machinery | 7.1 | 6.7 | 3.5 | 2.5 | (a) | (b) | (c) | (d) |
| | From natural sources | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From transboundary sources | 0.0 | 0.0 | 0.0 | 0.0 | (a) | (b) | (c) | (d) |
| | From other urban background sources | 0.8 | 0.6 | 0.6 | 0.6 | (a) | (b) | (c) | (d) |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | Total | 160.9 | 131.1 | 72.5 | 34.5 | 64.4 | 54.7 | 33.0 | 17.0 |
| | From cars | 47.3 | 31.8 | 21.9 | 14.6 | 18.4 | 13.3 | 10.1 | 7.3 |
| | From HGV rigid | 29.9 | 26.6 | 12.9 | 4.8 | 12.0 | 10.9 | 5.7 | 2.3 |
| | From HGV articulated | 62.6 | 54.5 | 26.3 | 9.0 | 24.2 | 21.7 | 11.4 | 4.3 |
| | From Buses | 3.7 | 3.3 | 1.9 | 0.9 | 1.5 | 1.4 | 0.9 | 0.4 |
| | From LGVs | 17.2 | 14.7 | 9.3 | 5.1 | 8.3 | 7.4 | 4.9 | 2.8 |
| | From motorcycles | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| Total (i.e. regional background + urban background + local components) | | 202.9 | 166.8 | 99.7 | 57.1 | 80.9 | 69.3 | 44.9 | 27.8 |

(a) The total annual mean $NO_2$ contribution for all components labelled (a) in 2008 was modelled to be 5 $\mu gm^{-3}$.
(b) The total annual mean $NO_2$ contribution for all components labelled (b) in 2010 is predicted to be 3.7 $\mu gm^{-3}$.
(c) The total annual mean $NO_2$ contribution for all components labelled (c) in 2015 is predicted to be 2.3 $\mu gm^{-3}$.
(d) The total annual mean $NO_2$ contribution for all components labelled (d) in 2020 is predicted to be 1.6 $\mu gm^{-3}$.

**Table 10. Modelled source apportionment for 2015 and 2020 for the LEZ scenario for traffic count point with the highest concentration in these years in $NO_2$_UK0014_Annual_1. (a) 2008 and 2010 baseline projections results are also presented here for reference (units: µgm$^{-3}$).**

| Spatial scale | Component | NOx | | | | NO2 (indicative) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2008 | 2010 | 2015 | 2020 | 2008 | 2010 | 2015 | 2020 |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | Total | 7.8 | 6.7 | 5.8 | 4.6 | (b) | (c) | (d) | (e) |
| | From within the UK | 4.6 | 4.0 | 3.4 | 2.7 | (b) | (c) | (d) | (e) |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | 2.7 | 2.4 | 1.9 | (b) | (c) | (d) | (e) |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | Total | 34.2 | 29.0 | 21.4 | 28.9 | 16.5 | 14.5 | 11.9 | 15.7 |
| | From road traffic sources | 12.0 | 8.5 | 5.0 | 3.9 | 11.5 | 10.8 | 9.5 | 13.8 |
| | From industry (including heat and power generation) | 9.5 | 8.4 | 8.0 | 13.8 | (b) | (c) | (d) | (e) |
| | From agriculture | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From commercial/residential sources | 4.7 | 4.7 | 4.3 | 5.4 | (b) | (c) | (d) | (e) |
| | From shipping | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From off road mobile machinery | 7.1 | 6.7 | 3.5 | 4.8 | (b) | (c) | (d) | (e) |
| | From natural sources | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From transboundary sources | 0.0 | 0.0 | 0.0 | 0.0 | (b) | (c) | (d) | (e) |
| | From other urban background sources | 0.8 | 0.6 | 0.6 | 0.9 | (b) | (c) | (d) | (e) |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | Total | 160.9 | 131.1 | 72.5 | 25.1 | 64.4 | 54.7 | 33.0 | 12.4 |
| | From cars | 47.3 | 31.8 | 21.9 | 10.1 | 18.4 | 13.3 | 10.1 | 5.0 |
| | From HGV rigid | 29.9 | 26.6 | 12.9 | 4.6 | 12.0 | 10.9 | 5.7 | 2.2 |
| | From HGV articulated | 62.6 | 54.5 | 26.3 | 4.8 | 24.2 | 21.7 | 11.4 | 2.2 |
| | From Buses | 3.7 | 3.3 | 1.9 | 1.1 | 1.5 | 1.4 | 0.9 | 0.5 |
| | From LGVs | 17.2 | 14.7 | 9.3 | 4.4 | 8.3 | 7.4 | 4.9 | 2.3 |
| | From motorcycles | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| Total (i.e. regional background + urban background + local components) | | 202.9 | 166.8 | 99.7 | 58.6 | 80.9 | 69.3 | 44.9 | 28.1 |

(a) The road with the maximum annual mean $NO_2$ concentration in different years is as follows. 2008: A section of the A50 (count point id 75422 ). 2010: A section of the A50 (count point id 75422 ). 2015: A section of the A50 (count point id 75422 ). 2020: A section of the A500 (count point id 8340 ). (OS grid (m): 391150, 343030; 391150, 343030; 391150, 343030; 391150, 343030).
(b) The total annual mean $NO_2$ contribution for all components labelled (b) in 2008 was modelled to be 5 µgm$^{-3}$.
(c) The total annual mean $NO_2$ contribution for all components labelled (c) in 2010 is predicted to be 3.7 µgm$^{-3}$.
(d) The total annual mean $NO_2$ contribution for all components labelled (d) in 2015 is predicted to be 2.3 µgm$^{-3}$.
(e) The total annual mean $NO_2$ contribution for all components labelled (e) in 2020 is predicted to be 2 µgm$^{-3}$.

**Table 11. The maximum $NO_X$ contribution from each source from across all the roads included in the exceedance situation on which exceedances remain in 2010, 2015 and 2020 under baseline conditions. Zeros indicate that there are no exceedances in the relevant year.**

| Spatial scale | Component | NOx | | | |
|---|---|---|---|---|---|
| | | 2008 | 2010 | 2015 | 2020 |
| Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor) | From within the UK | 4.6 | 4.0 | 3.4 | 0.0 |
| | From transboundary sources (includes shipping and other EU Member States) | 3.2 | 2.7 | 2.4 | 0.0 |
| Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor) | From road traffic sources | 17.4 | 12.8 | 6.8 | 0.0 |
| | From industry (including heat and power generation) | 17.4 | 15.3 | 14.5 | 0.0 |
| | From agriculture | 0.0 | 0.0 | 0.0 | 0.0 |
| | From commercial/residential sources | 7.1 | 7.1 | 6.6 | 0.0 |
| | From shipping | 0.0 | 0.0 | 0.0 | 0.0 |
| | From off road mobile machinery | 13.5 | 12.7 | 6.7 | 0.0 |
| | From natural sources | 0.0 | 0.0 | 0.0 | 0.0 |
| | From transboundary sources | 0.0 | 0.0 | 0.0 | 0.0 |
| | From other urban background sources | 1.4 | 0.9 | 0.9 | 0.0 |
| Local sources (i.e. contributions from sources < 0.3 km from the receptor) | From cars | 48.2 | 32.3 | 22.3 | 0.0 |
| | From HGV rigid | 30.2 | 26.9 | 12.9 | 0.0 |
| | From HGV articulated | 72.7 | 63.2 | 30.4 | 0.0 |
| | From Buses | 18.3 | 15.5 | 3.8 | 0.0 |
| | From LGVs | 17.2 | 14.7 | 9.3 | 0.0 |
| | From motorcycles | 0.3 | 0.3 | 0.2 | 0.0 |

**Figure 8. Background projections of annual mean $NO_2$ concentrations in 2015 and 2020 for the LEZ scenario. 2008 and baseline projections for 2010 are also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.**

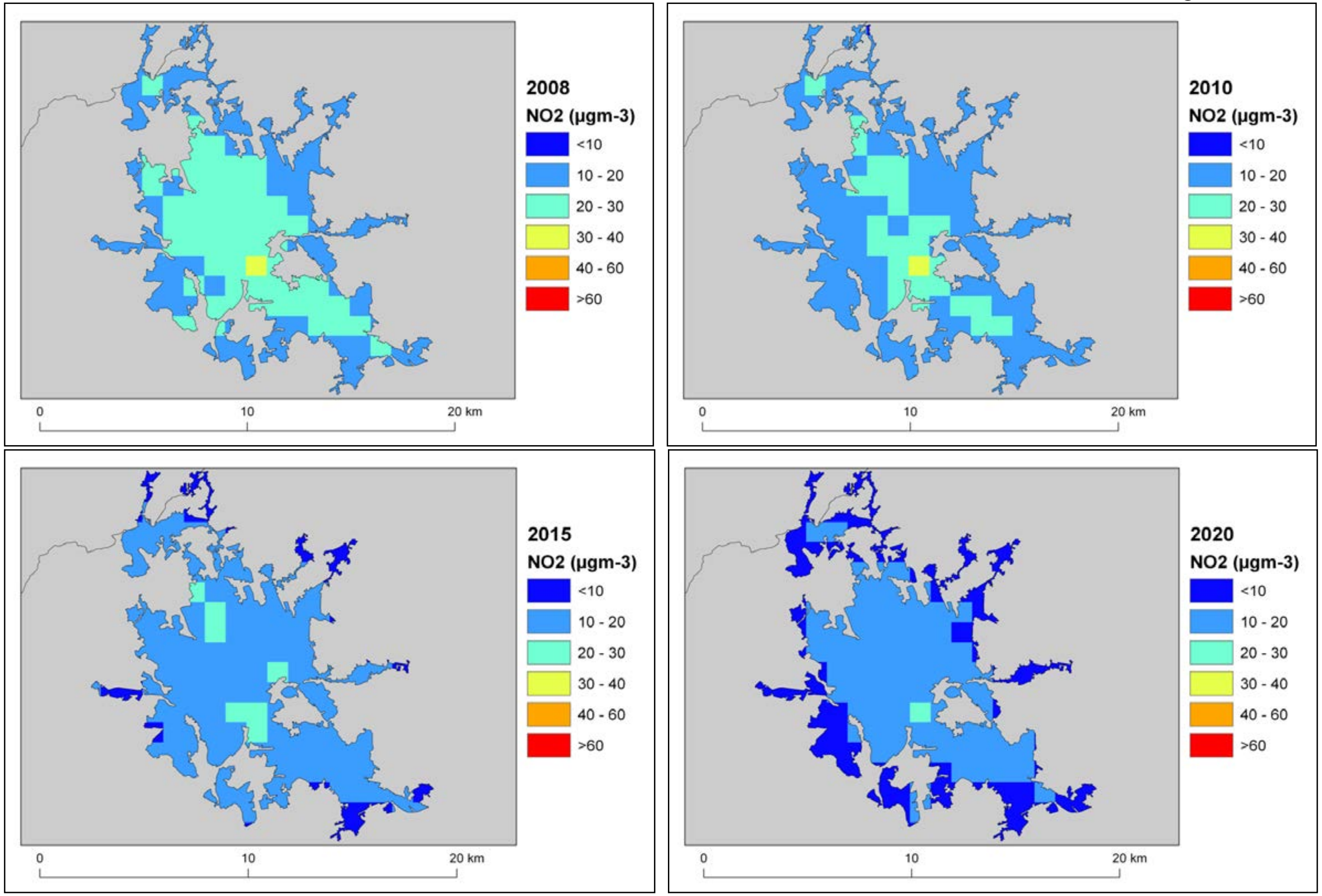
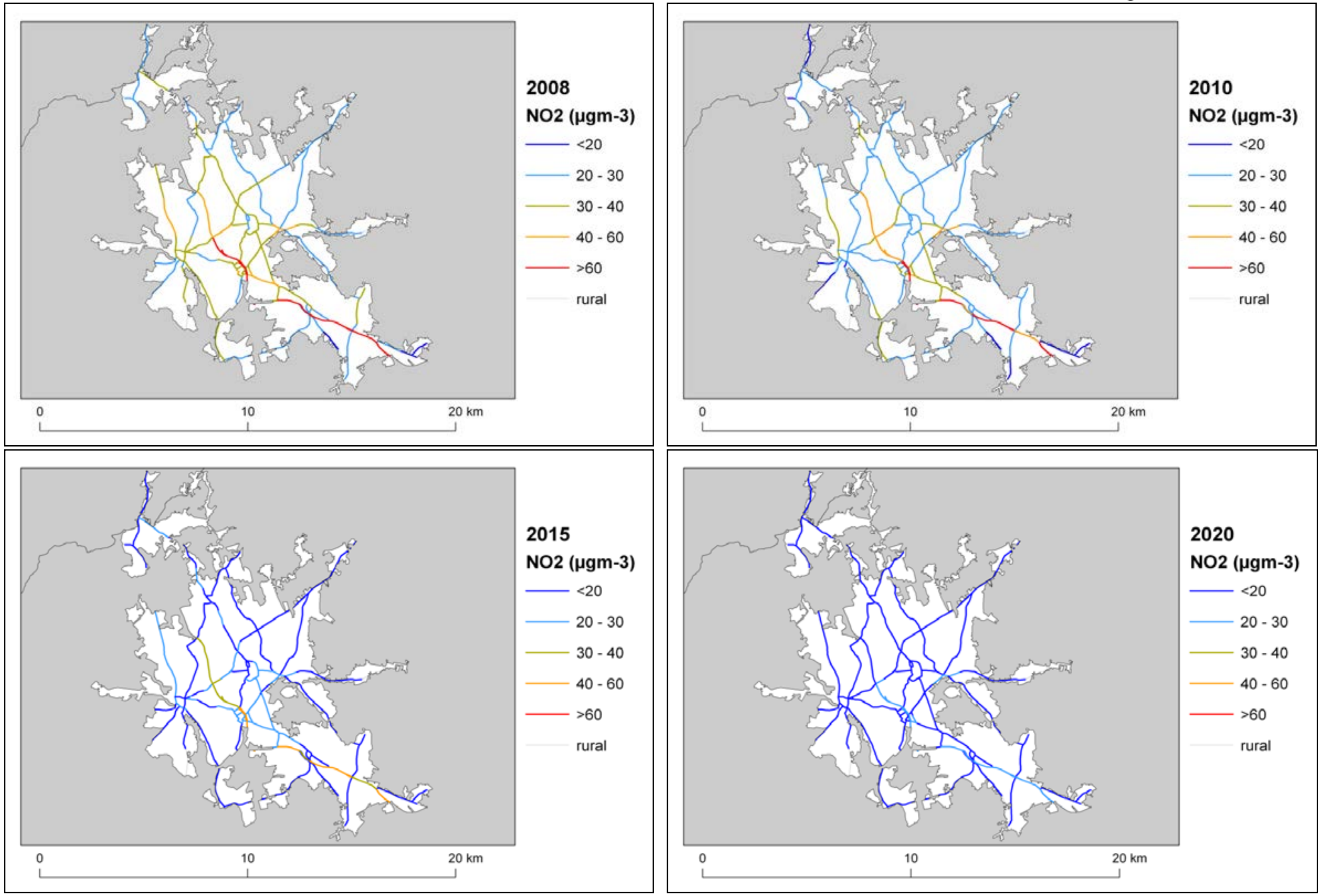


**Figure 9. Roadside projections of annual mean $NO_2$ concentrations in 2015 and 2020 for the LEZ scenario. 2008 and baseline projections for 2010 are also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.**



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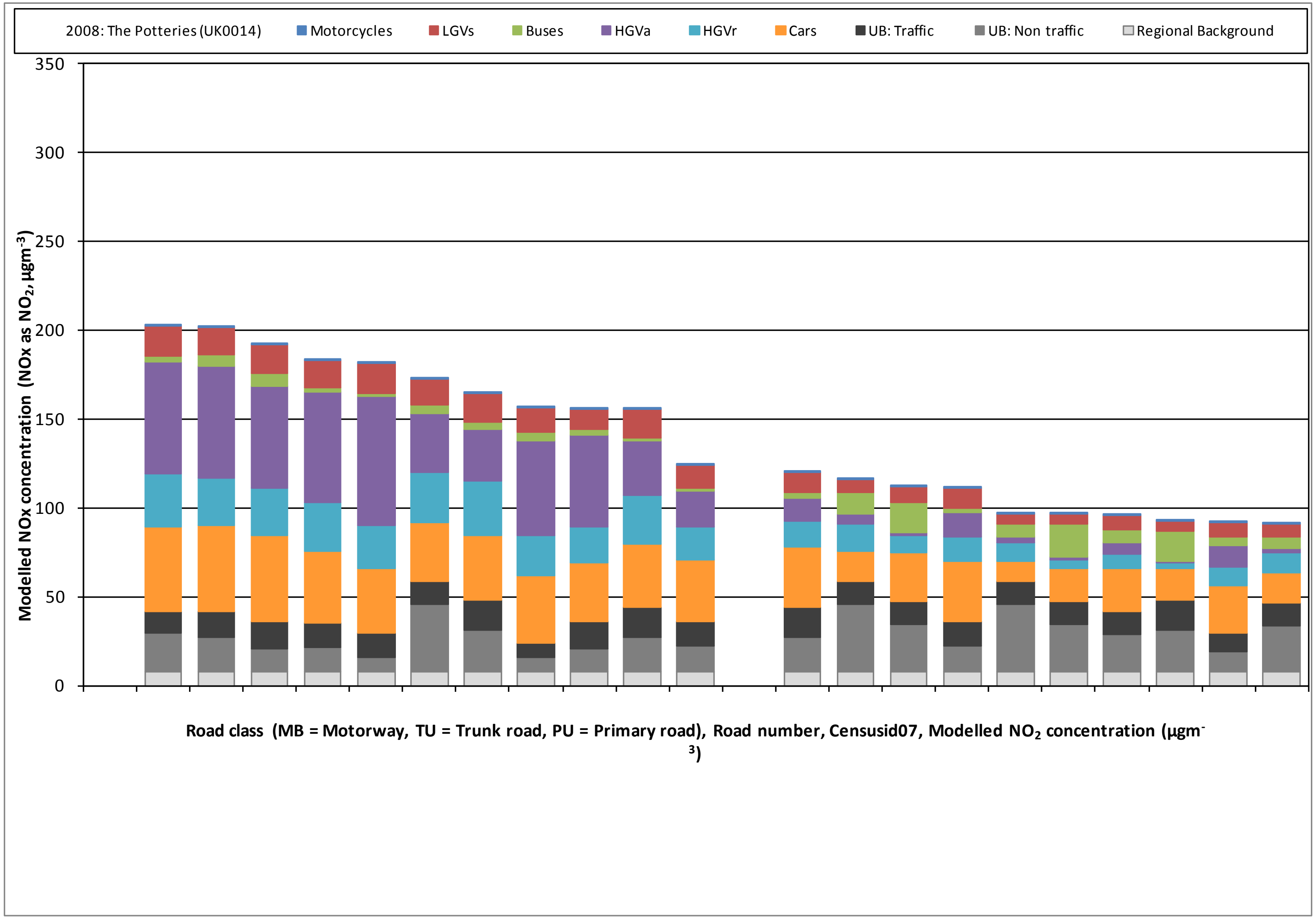
1st Daughter Directive 1999/30/EC.  Council Directive 1999/30/EC, of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (The First Daughter Directive). From the Official Journal of the European Communities, 29.6.1999,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

# List of Annexes

# Annex 1: Source apportionment graphs

Figure A1.1 Annual mean roadside $NO_X$ source apportionment plots for all roads exceeding the annual mean $NO_2$ limit value in 2008



# Annex 2: Tables of measures

**Table A2.1 Relevant Local Authority measures taken before or during 2010 within The Potteries (UK0014)**

| LA (a) | Measure code (b) | Title | Description | Other information |
|---|---|---|---|---|
| Stoke on Trent | Local_Stoke_on_Trent_E1 | Land use planning – considers alternatives for the site which covers re-development of sensitive receptors and/or closure (re-location) industrial emitters. | Land use planning – considers alternatives for the site which covers re-development of sensitive receptors and/or closure (re-location) industrial emitters. | • Type: Technical<br>• Sources affected: Transport; Industry including heating and power production<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_B1 | Consideration of new abatement on controlled stack outlets. | Consideration of new abatement on controlled stack outlets. | • Type: Technical<br>• Sources affected: Industry including heating and power production<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_B2 | Consider various options with regard to an industrial process at a Business Park. | Consider various options with regard to an industrial process at a Business Park. | • Type: Technical<br>• Sources affected: Industry including heating and power production<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_A1 | Consider introducing a Low emission zone | Consider introducing a Low emission zone | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No |

| LA (a) | Measure code (b) | Title | Description | Other information |
|---|---|---|---|---|
| | | | | • Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_G1 | Facilitate development of 'Travel Plans' for relevant local business and schools within the AQMA and the immediately surrounding area. | Facilitate development of 'Travel Plans' for relevant local business and schools within the AQMA and the immediately surrounding area. | • Type: Technical; Education/information<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : Yes<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_A2 | Consider introducing measures aimed at encouraging driver behaviour that minimises emissionse.g. 20 mph Residential Traffic Zones / Home Zones. Link to possible scheme for new access road to Fenpark Industrial Estate (see Action 3.1.5). | Consider introducing measures aimed at encouraging driver behaviour that minimises emissions of particles, e.g. 20 mph Residential Traffic Zones / Home Zones. Link to possible scheme for new access road to Fenpark Industrial Estate (see Action 3.1.5). | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_H1 | identify stakeholders in/around Industrial Park and provide information information to those in AQMA<br>- ensure | identify stakeholders in/around Industrial Park and provide information information to those in AQMA<br>- ensure other environmental initiatives (e.g. Greensteps) target relevant groups<br>- provide information on business responsible for par | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |

| LA (a) | Measure code (b) | Title | Description | Other information |
|---|---|---|---|---|
| | | other environmental initiatives (e.g. Greensteps) target relevant groups<br>- provide information on business responsible for par | | |
| Stoke on Trent | Local_Stoke_on_Tren t_A3 | Encourage the increased use of 'alternative' transport options along King Street, e.g. develop existing 'Quality Bus Partnership' scheme. | Encourage the increased use of 'alternative' transport options along King Street, e.g. develop existing 'Quality Bus Partnership' scheme. | • Type: Education/information<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : Yes<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Tren t_E2 | Examine possibility of alternative access road for those vehicles travelling to and from Fenpark Industrial Estate (including Waste Transfer Station operation - the subject of current dust nuisance complaints. | Examine possibility of alternative access road for those vehicles travelling to and from Fenpark Industrial Estate (including Waste Transfer Station operation - the subject of current dust nuisance complaints. | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Tren t_E3 | Considering fast-tracking of planned ATT improvements | Considering fast-tracking of planned ATT improvements | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term |

| LA (a) | Measure code (b) | Title | Description | Other information |
|---|---|---|---|---|
| | | | | • Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_H2 | Speed restriction on site | Speed restriction on site | • Type: Technical; Education/information<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_A4 | Low emission Zone | Low emission Zone | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_H3 | Bus quality partnerships | Bus quality partnerships | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_E4 | Construction of a new access road from King Street (the A5007) into the industrial estate | Construction of a new access road from King Street (the A5007) into the industrial estate | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_F1 | Consider introducing a | Consider introducing a voluntary or compulsory roadside vehicle emissions testing programme within | • Type: Technical; Education/information<br>• Sources affected: Transport |

| LA (a) | Measure code (b) | Title | Description | Other information |
|---|---|---|---|---|
| | | voluntary or compulsory roadside vehicle emissions testing programme within the AQMA and / or immediately surrounding area. | the AQMA and / or immediately surrounding area. | • Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |
| Stoke on Trent | Local_Stoke_on_Trent_H4 | Incorporate King Street within the North Staffordshire Advanced Transport Telematics (ATT) network. | Incorporate King Street within the North Staffordshire Advanced Transport Telematics (ATT) network. | • Type: Technical<br>• Sources affected: Transport<br>• Spatial scale: local<br>• Implementation date: 2009<br>• Reduction timescale: Long term<br>• Regulatory: No<br>• Smarter Choices (c) : No<br>• Reference (d): Local_zone14_StokeOnTrent_AQActionplan_1 |

(a) Name of responsible Local Authority.
(b) The Letter in the measure code indicates the main source sector that will be affected by the measure. Letters are assigned as follows: A - measures to reduce emissions from mobile sources, B - measures to reduce emissions from stationary sources, C - fuels and petrol stations, D - Economic incentives to reduce emissions (e.g. congestion charging, controlled parking zones), E - measures related to traffic planning/redesigning infrastructure, F - information/educational measures, G - change of transport mode (e.g. scheme to encourage people out of cars and onto bikes), H - Other.
(c) Measures have been classified as 'smarter choices' or not based on expert judgement
(d) References available for download from: http://uk-air.defra.gov.uk/library/NO$_2$ten/