

www.defra.gov.uk

Air Quality Plan for the achievement of EU air quality limit values for nitrogen dioxide (NO₂) in Kingston upon Hull (UK0018)

September 2011



Llywodraeth Cymru
Welsh Government



The Scottish
Government



DOE

Department of
the Environment
www.doeni.gov.uk



defra

Department for Environment
Food and Rural Affairs

Department for Environment, Food and Rural Affairs
Nobel House
17 Smith Square
London SW1P 3JR
Telephone 020 7238 6000
Website: www.defra.gov.uk

© Crown copyright 2011
Copyright in the typographical arrangement and design rests with the Crown.

This publication (excluding the Royal Arms and departmental logos) may be re-used free of charge in any format or medium for research for non-commercial purposes, private study or for internal circulation within an organisation. This is subject to it being re-used accurately and not used in a misleading context. The material must be acknowledged as Crown copyright and the title of the publication specified.

For any other use of this material please apply for a Click-Use Licence for Public Sector Information (PSI) or core material at:

<http://www.opsi.gov.uk/click-use/psi-licence-information/index.htm>

or by writing to:

Office of Public Sector Information
Information Policy Team
St Clements House
2-16 Colegate
Norwich NR3 1BQ

Fax: 01603 723000

Email: licensing@cabinet-office.x.gsi.gov.uk

Information about this publication and further copies are available from:

**Atmosphere and Local Environment Programme
Defra
Area 5F, Ergon House
17 Smith Square
London SW1P 3JR
Email address: euairquality@defra.gsi.gov.uk**

This document is also available on the Defra website at:

<http://uk-air.defra.gov.uk/library/no2ten/>

Published by the Department for Environment, Food and Rural Affairs

Contents

1. Introduction.....	4
1.1. This document.....	4
1.2. Context.....	4
1.3. Zone status.....	4
1.4. Plan structure	4
2. General Information about the Zone	6
2.1. Administrative information.....	6
2.2. Assessment details	8
2.3. Reporting Under European Directives	8
3. Overall Picture for 2008 reference year	10
3.1. Introduction.....	10
3.2. Reference year: NO ₂ _UK0018_Annual_1	10
4. Measures.....	15
4.1. Introduction.....	15
4.2. Source apportionment.....	15
4.3. Measures.....	15
4.4. Measures timescales	15
5. Baseline Model Projections.....	17
5.1. Overview of model projections.....	17
5.2. Baseline projections: NO ₂ _UK0018_Annual_1	17
6. Projections including the impact of the low emissions zone (LEZ) scenario	23
6.1. Overview of model projections.....	23
6.2. LEZ scenario projections: NO ₂ _UK0018_Annual_1	24

1. Introduction

1.1. This document

This document is the Kingston upon Hull (UK0018) air quality plan for the achievement of the EU air quality limit values for nitrogen dioxide (NO₂).

This plan presents the following information:

- General information regarding the Kingston upon Hull agglomeration zone
- Details of NO₂ exceedance situation(s) within the Kingston upon Hull 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 Kingston upon Hull 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 NO₂ 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 NO₂ 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 µg m⁻³
- The hourly limit value: no more than 18 hourly exceedances of 200 µg 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. 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 Kingston upon Hull 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 Kingston upon Hull 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 NO₂ 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 NO₂ limit values is presented in section 6.

2. General Information about the Zone

2.1. Administrative information

Zone name: Kingston upon Hull

Zone code: UK0018

Type of zone: agglomeration zone

Reference year: 2008

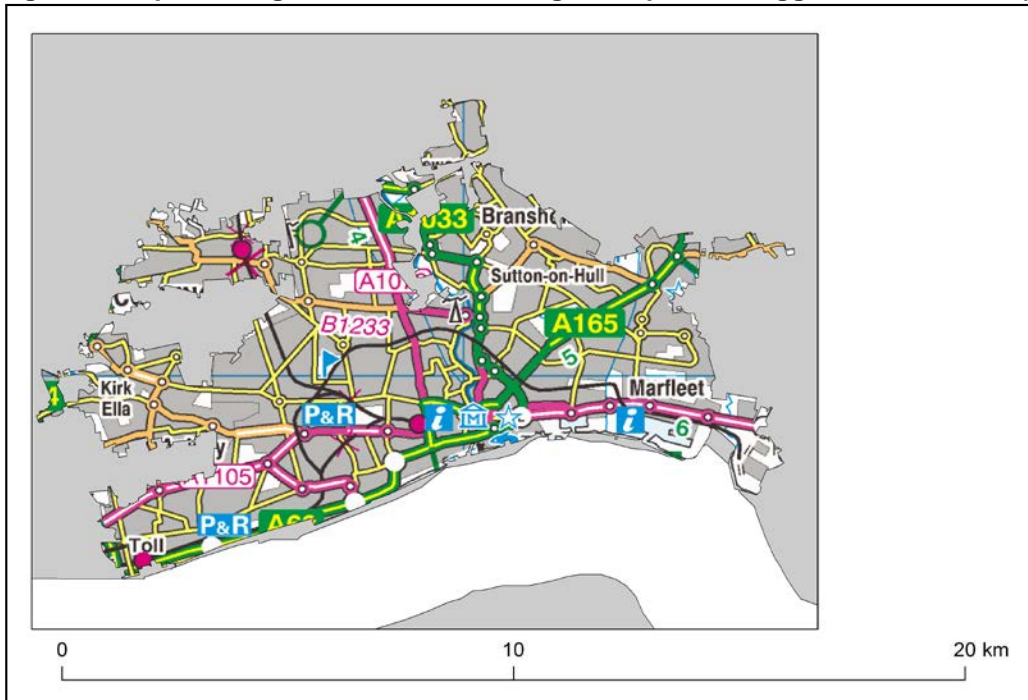
Extent of zone: Figure 1 shows the area covered by the Kingston upon Hull agglomeration zone

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.

1. East Riding of Yorkshire Council
2. Kingston upon Hull City Council

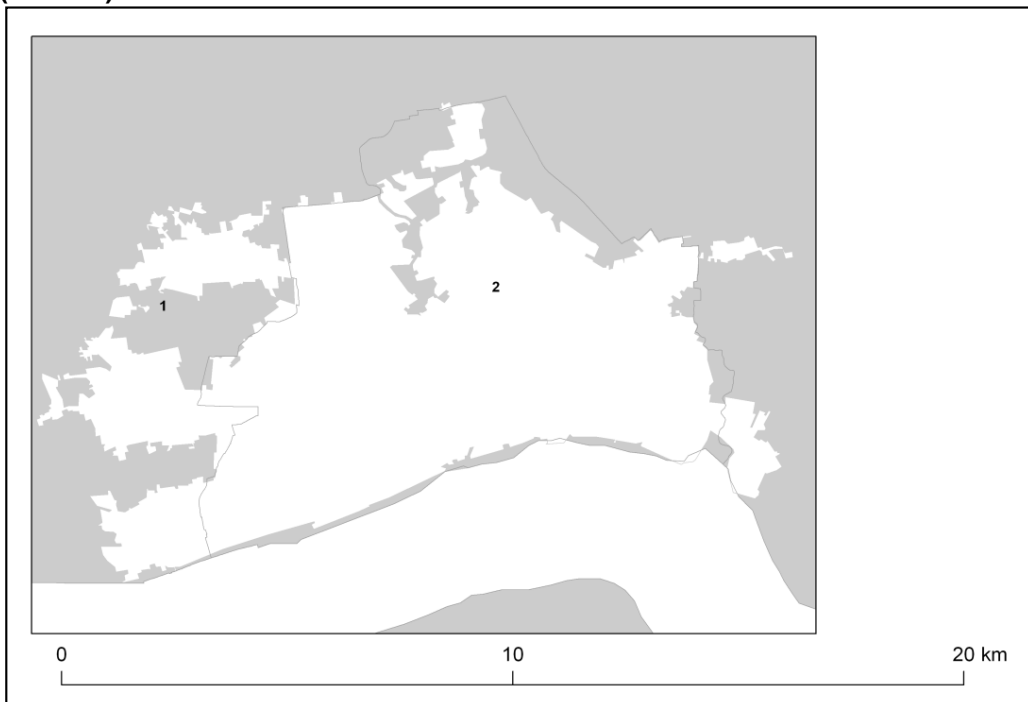
(Note: Local Authority boundaries do not necessarily coincide with zone boundaries. Hence Local Authorities may be listed within more than one zone plan.)

Figure 1. Map showing the extent of the Kingston upon Hull agglomeration zone (UK0018).



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

Figure 2. Map showing Local Authorities within the Kingston upon Hull agglomeration zone (UK0018).



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

2.2. Assessment details

Measurements

NO₂ measurements in this zone were available in 2008 from the following national network monitoring stations (NO₂ data capture for each station in 2008 shown in brackets):

- Hull Freetown GB0776A (92.6%)

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

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): 82 km²
- Total population within zone (approx): 260479 people
- Total road length where an assessment of NO₂ concentrations have been made: 60.1 km in 2008 (and similar lengths in previous years).

Zone maps

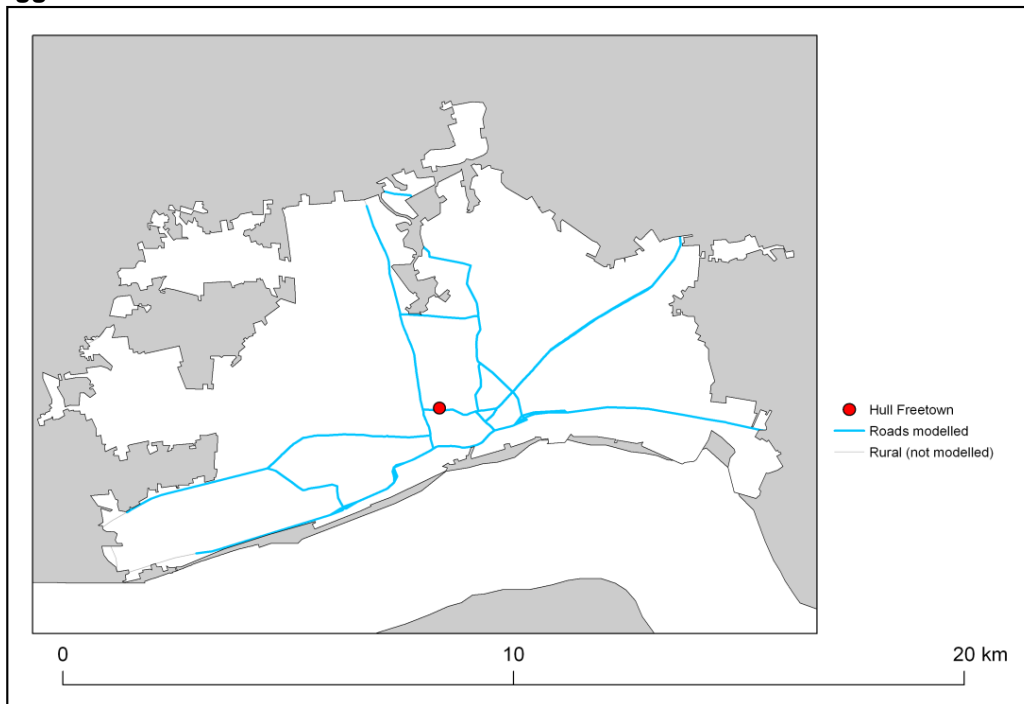
Figure 3 presents the location of the NO₂ monitoring stations within this zone for 2008 and the roads for which NO₂ concentrations have been modelled. NO₂ concentrations at background locations have been modelled across the entire zone at a 1 x 1 km² resolution.

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 NO₂ monitoring sites with valid data in 2008 and roads where concentrations have been modelled within the Kingston upon Hull (UK0018) agglomeration zone.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

3. Overall Picture for 2008 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 Kingston upon Hull agglomeration zone only the annual limit value was exceeded in 2008. Hence, one exceedance situation for this zone has been defined, NO₂_UK0018_Annual_1, which covers the exceedance of the annual limit value. This exceedance situation is described below.

For both NO₂ 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: NO₂_UK0018_Annual_1

The NO₂_UK0018_Annual_1 exceedance situation covers all exceedances of the annual mean limit value in the Kingston upon Hull 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 NO₂ results in this exceedance situation for the same time period. This table shows that, in 2008, 31.7 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 NO₂ concentration in 2008 was 72.1 µgm⁻³. Maps showing the modelled annual mean NO₂ 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 increase in the maximum modelled annual mean NO₂ concentration between 2008 and 2009 (72.1 µgm⁻³ to 79.2 µgm⁻³) occurred because the location with the highest modelled concentration in this agglomeration zone moved between 2008 and 2009. This change in location occurred because of an increase in the total traffic count data at the location with the highest concentration in 2009.

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 NO₂ source apportionment. Table 3 presents summary source apportionment information in this exceedance situation for 2008, including:

- The modelled NO_x and indicative NO₂ source apportionment for the section of road with the highest modelled NO₂ 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 NO₂ 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 NO₂ concentrations for these air quality plans. This method involves calculating the maximum and minimum possible contribution from each source to the NO₂ 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 NO₂

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 _UK0018_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 NO₂_UK0018_Annual_1 for 2001 onwards, µgm⁻³. (Data capture shown in brackets) (a)

Site name (EOI code)	2001	2002	2003	2004	2005	2006	2007	2008	2009
Hull Centre (GB0596A)	36 (98%)	49 (4%)							
Hull Freetown (GB0776A)		38 (15%)	33 (94%)	27 (89%)	21 (66%)	24 (87%)	25 (95%)	27 (93%)	27 (93%)

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

Table 2. Annual mean NO₂ model results in NO₂_UK0018_Annual_1 for 2001 onwards

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Road length exceeding (km)	17.6	12.8	38.8	34.6	28.1	34.6	32.2	31.7	37.9
Background area exceeding (km ²)	0	0	0	0	0	0	0	0	0
Maximum modelled concentration (µgm ⁻³) (a)	62.7	59.2	79.0	71.6	60.4	75.6	72.1	72.1	79.2

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

Table 3. Source apportionment summary information for 2008 in NO₂_UK0018_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	8.8	(c)	
	From within the UK	4.7	(c)	4.7
	From transboundary sources (includes shipping and other EU Member States)	4.1	(c)	4.1
Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor)	Total	50.8	21.7	-
	From road traffic sources	13.9	16.2	17.6
	From industry (including heat and power generation)	16.6	(c)	23.9
	From agriculture	0.0	(c)	0.0
	From commercial/residential sources	4.0	(c)	6.6
	From shipping	3.7	(c)	8.7
	From off road mobile machinery	12.4	(c)	14.1
	From natural sources	0.0	(c)	0.0
	From transboundary sources	0.0	(c)	0.0
	From other urban background sources	0.2	(c)	0.6
Local sources (i.e. contributions from sources < 0.3 km from the receptor)	Total	133.9	50.4	-
	From cars	27.6	10.4	36.3
	From HGV rigid	31.1	11.8	31.1
	From HGV articulated	62.6	22.9	68.0
	From Buses	4.9	1.9	36.2
	From LGVs	7.5	3.4	12.3
	From motorcycles	0.3	0.1	0.5
Total (i.e. regional background + urban background + local components)		193.5	72.1	-

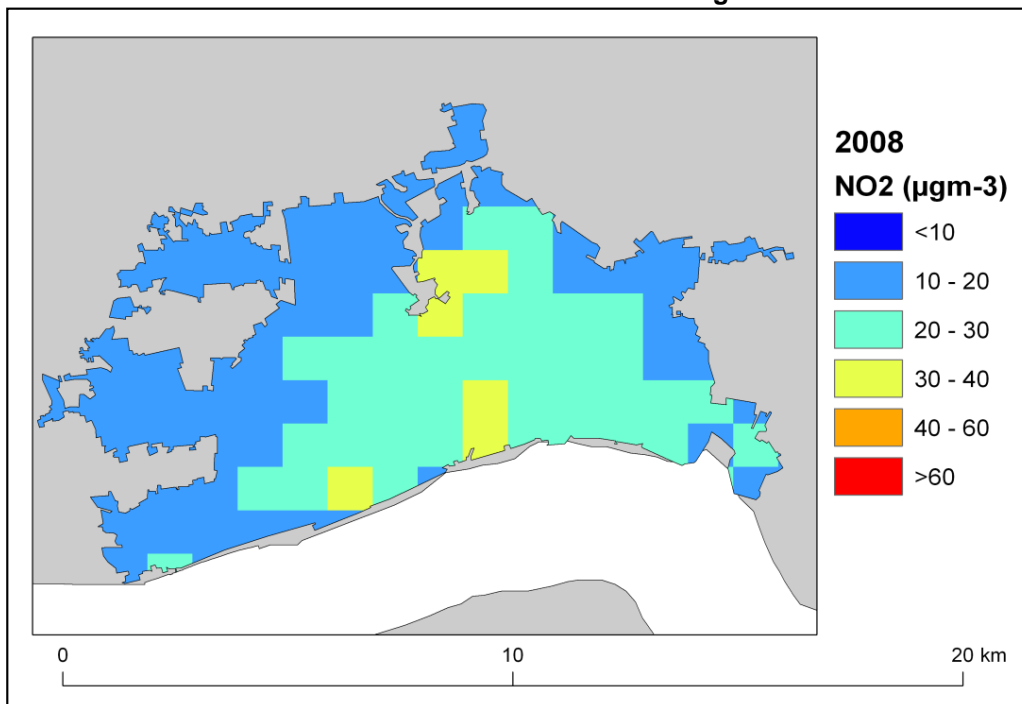
(a) The road with the highest modelled annual mean NO₂ concentration in this exceedance situation in 2008 is a section of the A63, traffic count point id 7913 (OS grid (m): 510400, 428500).

(b) This column gives the maximum contribution for each component from all the roads included in the exceedance situation.

(c) The combined modelled annual mean NO₂ concentration contribution for these components is 5.5 µgm⁻³. A more detailed NO₂ source apportionment is currently unavailable for these sectors.

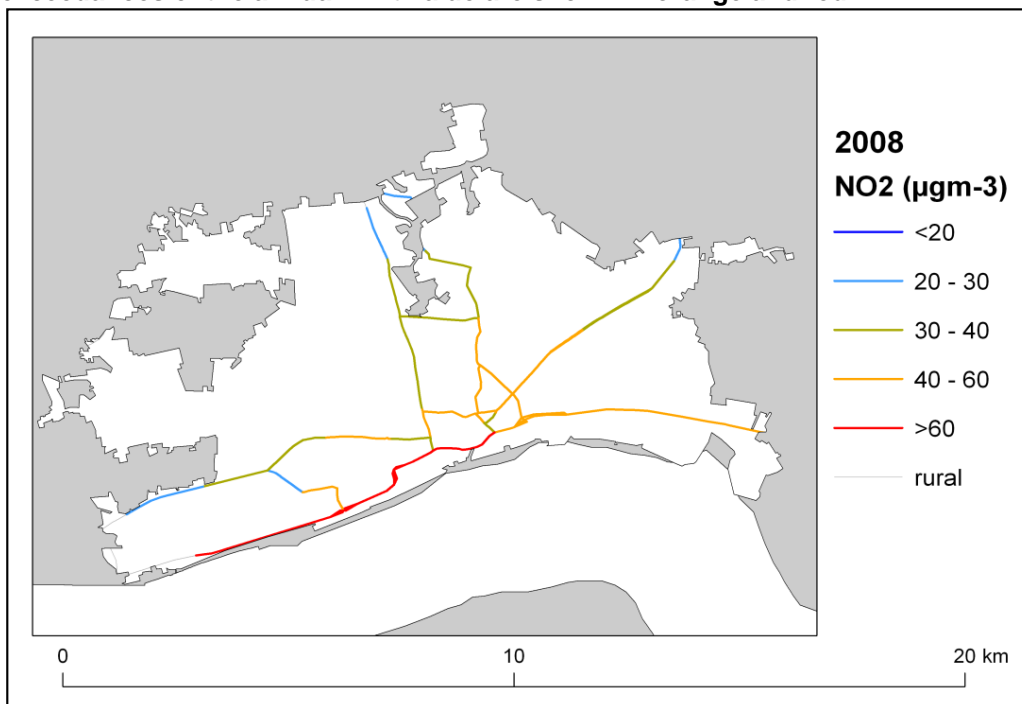
(d) Source apportionment for NO₂ is indicative, see UK Technical Report.

Figure 4. Map of modelled background annual mean NO₂ concentrations 2008. Modelled exceedances of the annual limit value are shown in orange and red.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

Figure 5. Map of modelled roadside annual mean NO₂ concentrations 2008. Modelled exceedances of the annual limit value are shown in orange and red.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

4. Measures

4.1. Introduction

This section (section 4) gives details of measures that address exceedances of the NO₂ limit values within Kingston upon Hull 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(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 ug m⁻³ of NO_x out of a total of 193.5 ug m⁻³ of NO_x. Articulated HGVs and cars were important sources on the trunk roads with the highest concentrations. Cars and on some roads, buses, rigid HGVs and articulated HGVs 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 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 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 NO₂ 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 NO₂ 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 NO₂ 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: NO₂_UK0018_Annual_1

Table 4 presents summary results for the baseline model projections for 2010, 2015 and 2020 for the NO₂_UK0018_Annual_1 exceedance situation. This shows that the maximum modelled annual mean NO₂ concentration predicted for 2010 in this exceedance situation is 62.6 µg m⁻³. By 2015, the maximum modelled annual mean NO₂ concentration is predicted to drop to 41.7 µg m⁻³. Hence, the model results suggest that compliance with the NO₂ annual limit value is unlikely to be achieved by 2015 under baseline conditions in this exceedance situation.

The projected modelled NO_x and indicative NO₂ annual mean source apportionments for 2010, 2015 and 2020 at the location with the biggest compliance gap in 2008 are presented in Table 5. The model results suggest that this location will continue to have the highest annual mean NO₂ concentration within this exceedance situation in 2010, 2015 and 2020. 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 6 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 NO₂ 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 NO₂ model results in NO₂_UK0018_Annual_1

	2008	2010	2015	2020
Road length exceeding (km)	31.7	23.1	0.8	0.0
Background area exceeding (km ²)	0	0	0	0
Maximum modelled concentration (µgm ⁻³) (a)	72.1	62.6	41.7	26.7

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

Table 5. Modelled source apportionment for 2010, 2015 and 2020 under baseline conditions for traffic count point 7913 on the A63 (the road section with the maximum modelled annual mean NO₂ concentration in 2008 in NO₂_UK0018_Annual_1. OS grid (m): 510400, 428500). 2008 results are also presented here for reference (units: µgm⁻³).

Spatial scale	Component	NOx				NO ₂ (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	8.8	7.7	6.7	5.5	(a)	(b)	(c)	(d)
	From within the UK	4.7	4.1	3.6	2.9	(a)	(b)	(c)	(d)
	From transboundary sources (includes shipping and other EU Member States)	4.1	3.6	3.2	2.6	(a)	(b)	(c)	(d)
Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor)	Total	50.8	44.1	34.0	28.8	21.7	19.3	16.2	14.9
	From road traffic sources	13.9	10.1	6.4	3.9	16.2	15.2	13.5	13.1
	From industry (including heat and power generation)	16.6	14.6	13.9	13.2	(a)	(b)	(c)	(d)
	From agriculture	0.0	0.0	0.0	0.0	(a)	(b)	(c)	(d)
	From commercial/residential sources	4.0	4.0	3.7	3.5	(a)	(b)	(c)	(d)
	From shipping	3.7	3.6	3.7	3.7	(a)	(b)	(c)	(d)
	From off road mobile machinery	12.4	11.7	6.2	4.4	(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	0.2	0.1	0.1	0.1	(a)	(b)	(c)	(d)	
Local sources (i.e. contributions from sources < 0.3 km from the receptor)	Total	133.9	111.7	61.3	26.1	50.4	43.3	25.5	11.7
	From cars	27.6	18.5	12.8	8.5	10.4	7.4	5.5	3.9
	From HGV rigid	31.1	27.6	14.3	5.0	11.8	10.7	5.8	2.2
	From HGV articulated	62.6	54.5	27.5	9.0	22.9	20.3	11.0	3.9
	From Buses	4.9	4.4	2.6	1.2	1.9	1.7	1.1	0.5
	From LGVs	7.5	6.4	4.0	2.2	3.4	3.1	2.0	1.1
From motorcycles	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
Total (i.e. regional background + urban background + local components)		193.5	163.4	102.1	60.5	72.1	62.6	41.7	26.7

(a) The total annual mean NO₂ contribution for all components labelled (a) in 2008 was modelled to be 5.5 µgm⁻³.

(b) The total annual mean NO₂ contribution for all components labelled (b) in 2010 is predicted to be 4.2 µgm⁻³.

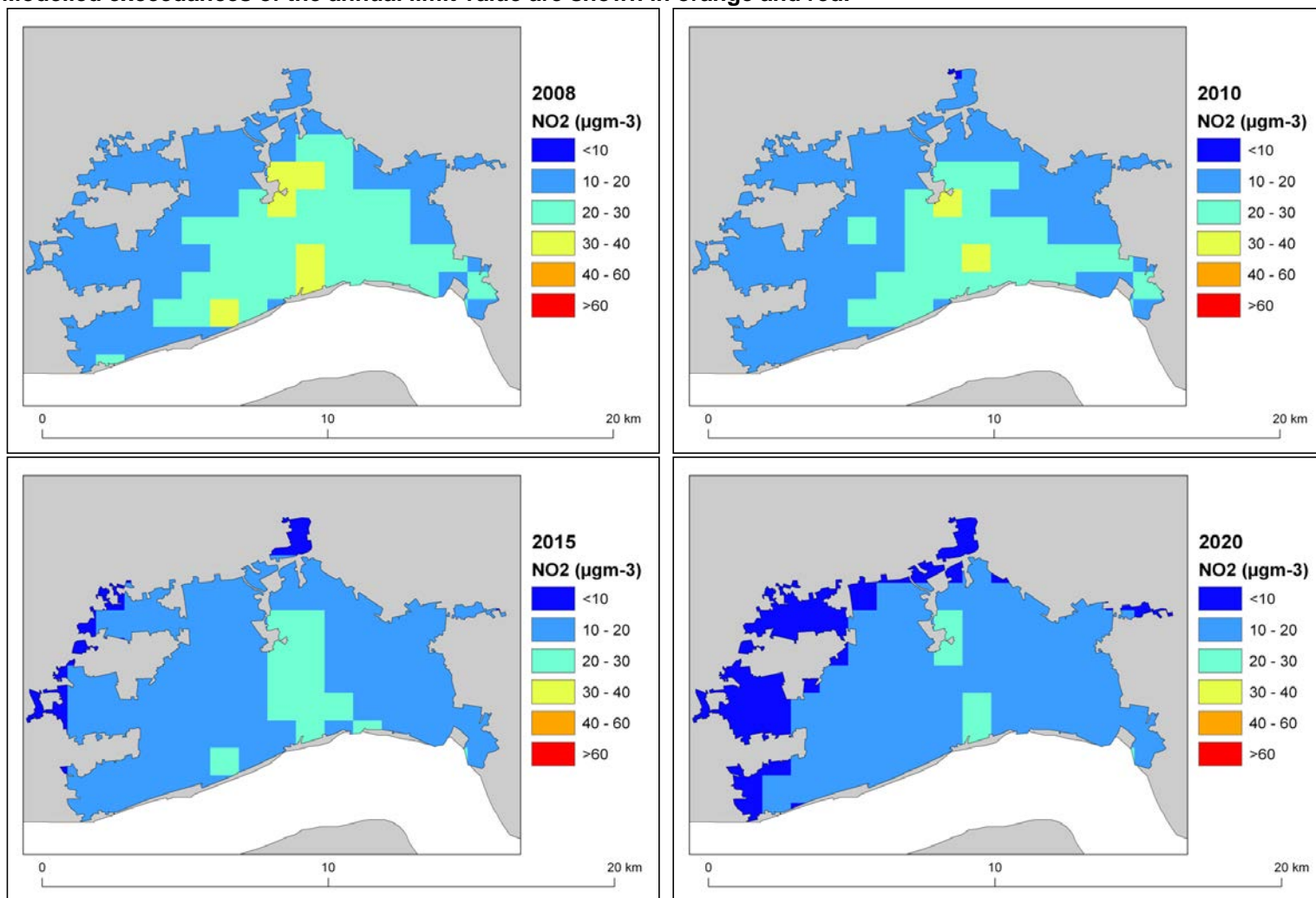
(c) The total annual mean NO₂ contribution for all components labelled (c) in 2015 is predicted to be 2.8 µgm⁻³.

(d) The total annual mean NO₂ contribution for all components labelled (d) in 2020 is predicted to be 1.8 µgm⁻³.

Table 6. 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.

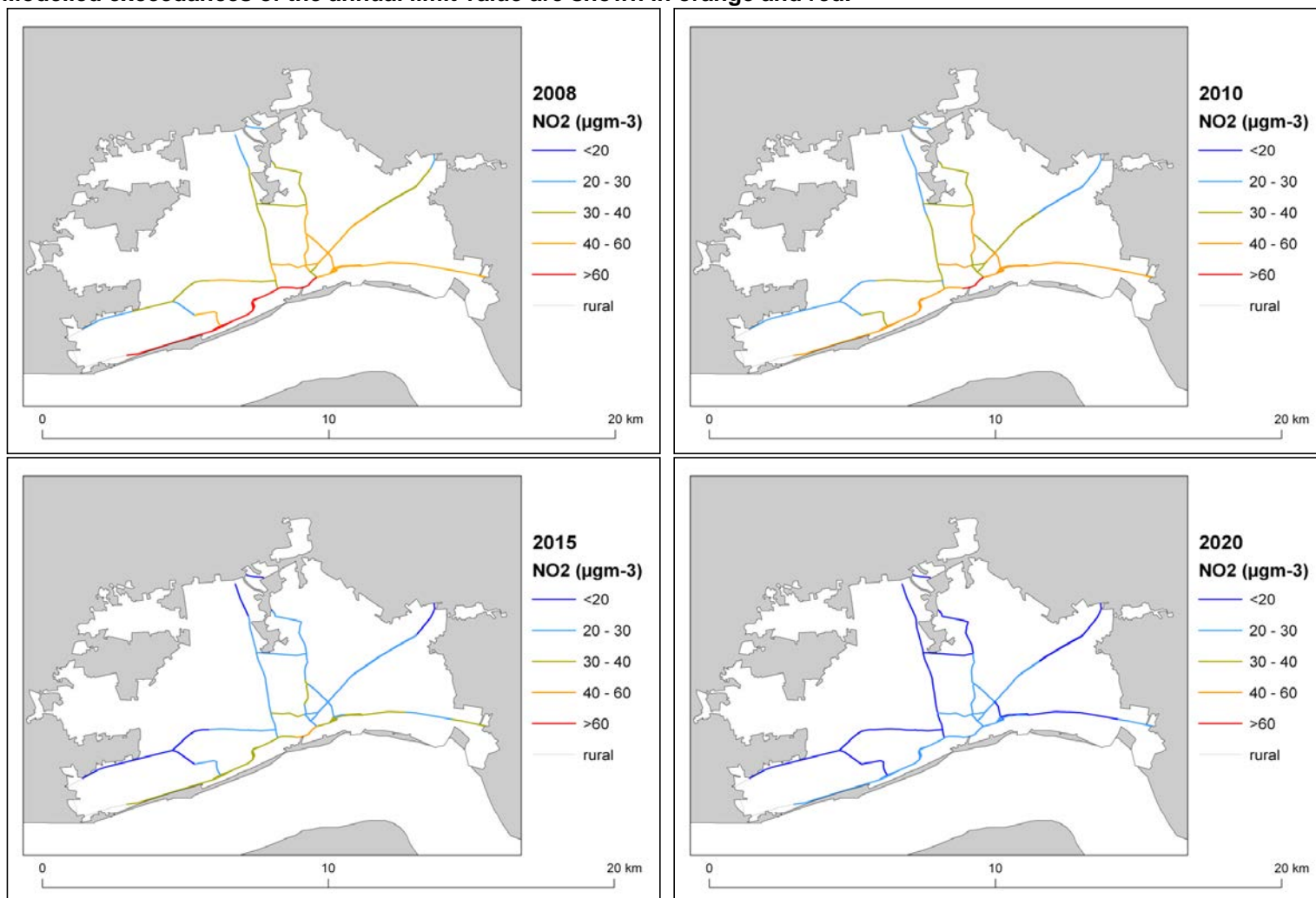
Spatial scale	Component	NO _x			
		2008	2010	2015	2020
Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor)	From within the UK	4.7	4.1	3.6	0.0
	From transboundary sources (includes shipping and other EU Member States)	4.1	3.6	3.2	0.0
Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor)	From road traffic sources	17.6	12.9	6.4	0.0
	From industry (including heat and power generation)	23.9	21.0	13.9	0.0
	From agriculture	0.0	0.0	0.0	0.0
	From commercial/residential sources	6.6	5.8	3.7	0.0
	From shipping	8.7	8.3	3.7	0.0
	From off road mobile machinery	14.1	13.3	6.2	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	0.6	0.5	0.1	0.0
Local sources (i.e. contributions from sources < 0.3 km from the receptor)	From cars	36.3	24.4	12.8	0.0
	From HGV rigid	31.1	27.6	14.3	0.0
	From HGV articulated	68.0	59.2	27.5	0.0
	From Buses	36.2	28.5	2.6	0.0
	From LGVs	12.3	10.6	4.0	0.0
	From motorcycles	0.5	0.4	0.2	0.0

Figure 6. Background baseline projections of annual mean NO₂ 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.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

Figure 7. Roadside baseline projections of annual mean NO₂ 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.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

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 NO₂ limit values. The scenario modelled here would require all HGVs and buses to meet at least Euro IV emission standards for NO_x and PM₁₀ 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 NO₂. 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

- Kingston upon Hull City Council

The impact of the LEZ scenario on projected NO₂ 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 NO₂ 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: NO₂_UK0018_Annual_1

Table 7 presents summary results for the LEZ scenario model projections for 2015 and 2020 for the NO₂_UK0018_Annual_1 exceedance situation. This shows that the maximum modelled annual mean NO₂ concentration predicted for 2015 for the LEZ scenario in this exceedance situation is 40.7 µgm⁻³. Hence, the model results suggest that compliance with the NO₂ 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 NO₂ annual mean limit value is likely to be achieved in this exceedance situation in 2020, when the maximum modelled annual mean NO₂ concentration predicted to be 26.6 µgm⁻³.

The projected modelled NO_x and indicative NO₂ annual mean source apportionments for 2010, 2015 and 2020 at the location with the biggest compliance gap in 2008 are presented in Table 8. The model results suggest that this location will continue to have the highest annual mean NO₂ concentration within this exceedance situation in 2010, 2015 and 2020. 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 9 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 NO₂ 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 7. Annual mean NO₂ model results in NO₂_UK0018_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)	31.7	23.1	0.8	0.0
Background area exceeding (km ²)	0	0	0	0
Maximum modelled concentration (µgm ⁻³) (a)	72.1	62.6	40.7	26.6

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

Table 8. Modelled source apportionment for 2015 and 2020 for the LEZ scenario for traffic count point 7913 on the A63 (the road section with the maximum modelled annual mean NO₂ concentration in 2008 in NO₂_UK0018_Annual_1 OS grid (m): 510400, 428500). 2008 and 2010 baseline projections results are also presented here for reference (units: µgm⁻³).

Spatial scale	Component	NOx				NO ₂ (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	8.8	7.7	6.7	5.5	(a)	(b)	(c)	(d)
	From within the UK	4.7	4.1	3.6	2.9	(a)	(b)	(c)	(d)
	From transboundary sources (includes shipping and other EU Member States)	4.1	3.6	3.1	2.6	(a)	(b)	(c)	(d)
Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor)	Total	50.8	44.1	33.2	28.7	21.7	19.3	16.0	14.9
	From road traffic sources	13.9	10.1	5.6	3.8	16.2	15.2	13.5	13.1
	From industry (including heat and power generation)	16.6	14.6	13.9	13.2	(a)	(b)	(c)	(d)
	From agriculture	0.0	0.0	0.0	0.0	(a)	(b)	(c)	(d)
	From commercial/residential sources	4.0	4.0	3.7	3.5	(a)	(b)	(c)	(d)
	From shipping	3.7	3.6	3.7	3.7	(a)	(b)	(c)	(d)
	From off road mobile machinery	12.4	11.7	6.2	4.4	(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	0.2	0.1	0.1	0.1	(a)	(b)	(c)	(d)	
Local sources (i.e. contributions from sources < 0.3 km from the receptor)	Total	133.9	111.7	59.3	26.0	50.4	43.3	24.7	11.7
	From cars	27.6	18.5	12.8	8.5	10.4	7.4	5.5	3.9
	From HGV rigid	31.1	27.6	13.5	5.0	11.8	10.7	5.5	2.2
	From HGV articulated	62.6	54.5	26.3	9.0	22.9	20.3	10.6	3.9
	From Buses	4.9	4.4	2.6	1.2	1.9	1.7	1.1	0.5
	From LGVs	7.5	6.4	4.0	2.2	3.4	3.1	2.0	1.1
From motorcycles	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
Total (i.e. regional background + urban background + local components)		193.5	163.4	99.3	60.3	72.1	62.6	40.7	26.6

(a) The total annual mean NO₂ contribution for all components labelled (a) in 2008 was modelled to be 5.5 µgm⁻³.

(b) The total annual mean NO₂ contribution for all components labelled (b) in 2010 is predicted to be 4.2 µgm⁻³.

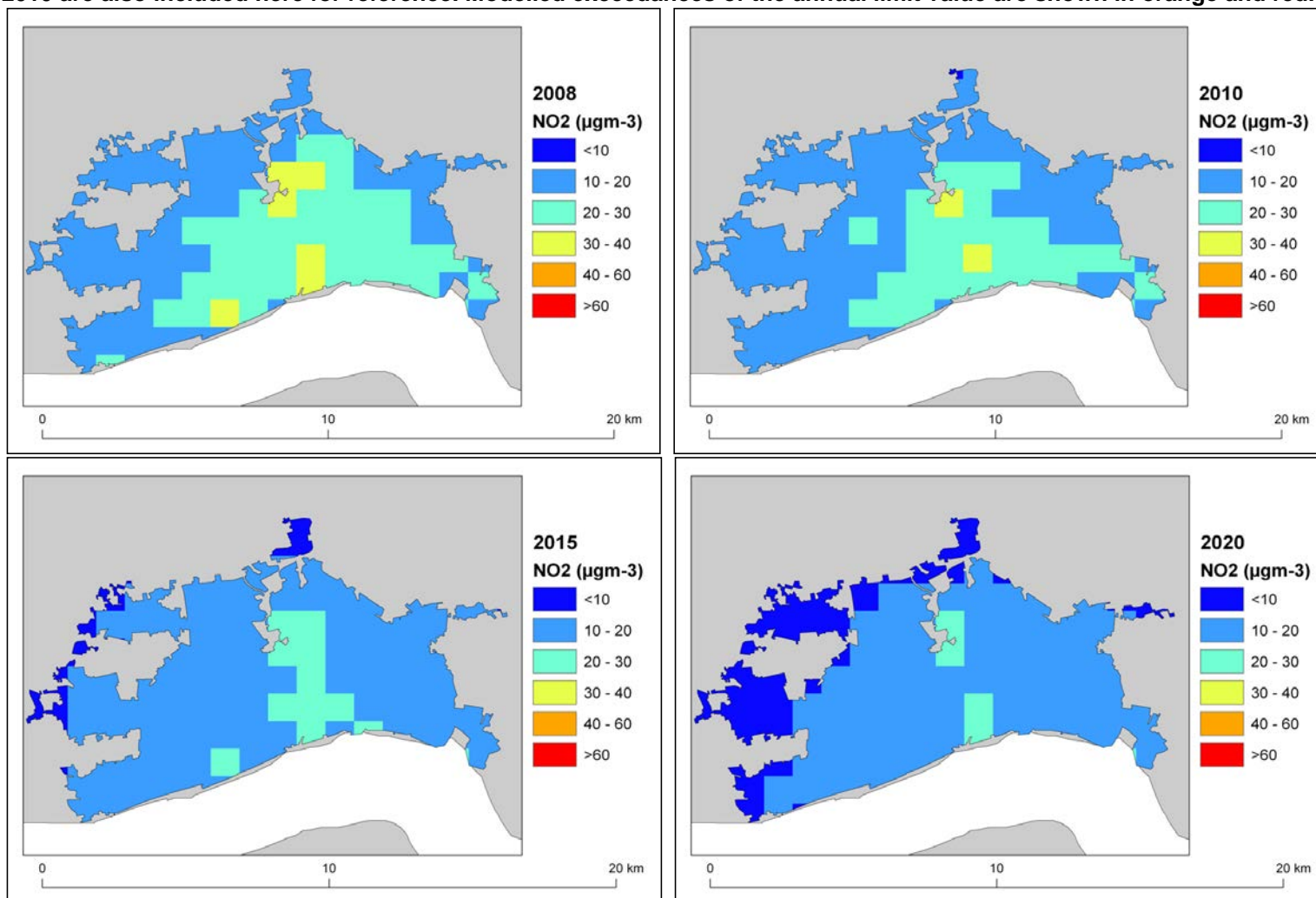
(c) The total annual mean NO₂ contribution for all components labelled (c) in 2015 is predicted to be 2.5 µgm⁻³.

(d) The total annual mean NO₂ contribution for all components labelled (d) in 2020 is predicted to be 1.8 µgm⁻³.

Table 9. 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.

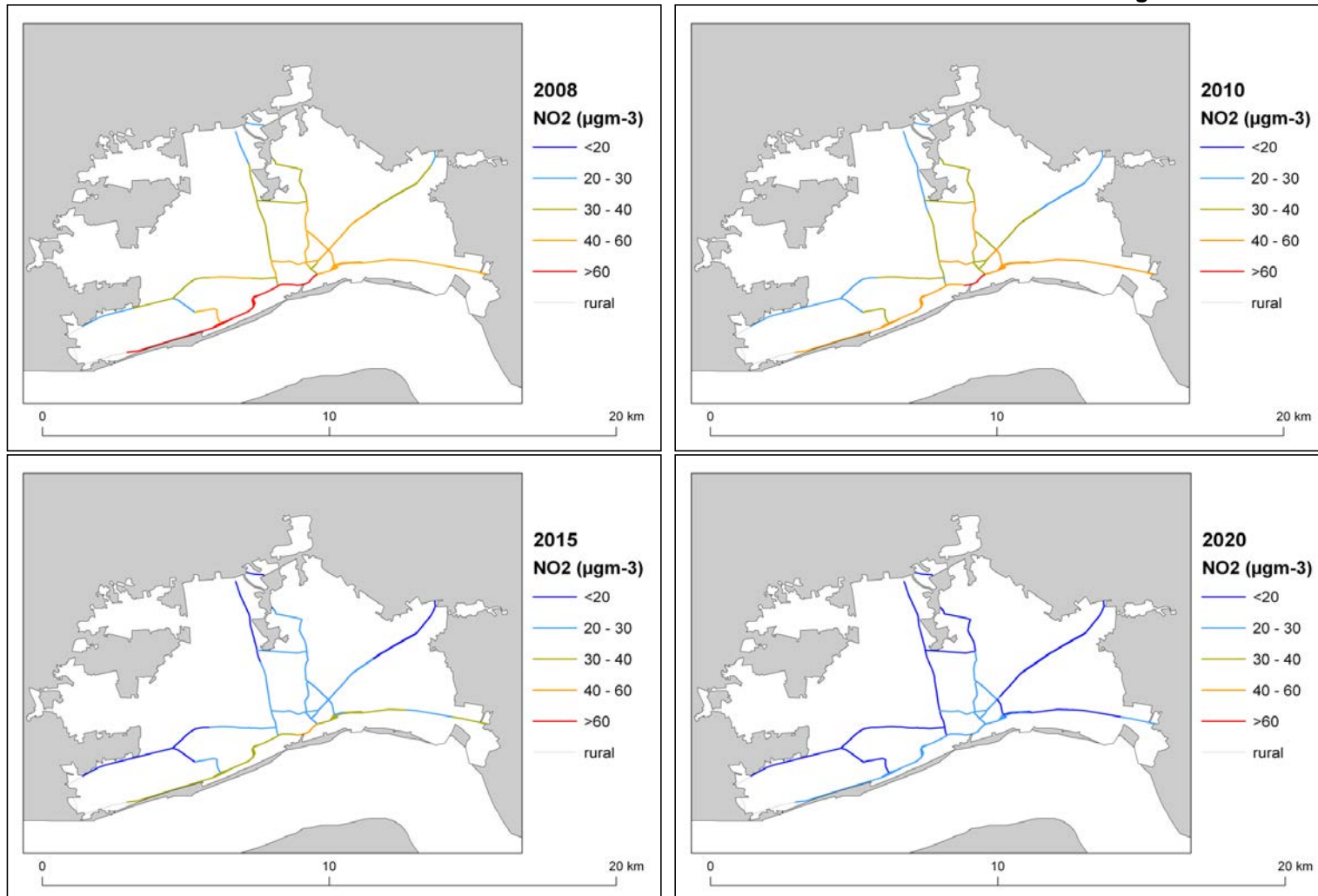
Spatial scale	Component	NO _x			
		2008	2010	2015	2020
Regional background sources (i.e. contributions from distant sources of > 30 km from the receptor)	From within the UK	4.7	4.1	3.6	0.0
	From transboundary sources (includes shipping and other EU Member States)	4.1	3.6	3.1	0.0
Urban background sources (i.e. sources located within 0.3 - 30 km from the receptor)	From road traffic sources	17.6	12.9	5.6	0.0
	From industry (including heat and power generation)	23.9	21.0	13.9	0.0
	From agriculture	0.0	0.0	0.0	0.0
	From commercial/residential sources	6.6	5.8	3.7	0.0
	From shipping	8.7	8.3	3.7	0.0
	From off road mobile machinery	14.1	13.3	6.2	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	0.6	0.5	0.1	0.0
Local sources (i.e. contributions from sources < 0.3 km from the receptor)	From cars	36.3	24.4	12.8	0.0
	From HGV rigid	31.1	27.6	13.5	0.0
	From HGV articulated	68.0	59.2	26.3	0.0
	From Buses	36.2	28.5	2.6	0.0
	From LGVs	12.3	10.6	4.0	0.0
	From motorcycles	0.5	0.4	0.2	0.0

Figure 8. Background projections of annual mean NO₂ 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.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

Figure 9. Roadside projections of annual mean NO₂ 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.



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2011].

References

Air Quality Expert Group (AQEG, 2004). Nitrogen Dioxide in the United Kingdom.
<http://www.defra.gov.uk/environment/quality/air/airquality/publications/nitrogen-dioxide/index.htm>

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, L 156/78

UK technical report, UK overview document and List of UK and National measures are available at <http://www.defra.gov.uk/environment/quality/air/air-quality/eu/>

CDR Central Data Repository. <http://cdr.eionet.europa.eu/>

Air Quality Directive 2008/50/EC. Council Directive 2008/50/EC, of 21 May 2008. On ambient air quality and cleaner air for Europe. From the Official Journal of the European Union, 11.6.2008, En series, L152/1

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.

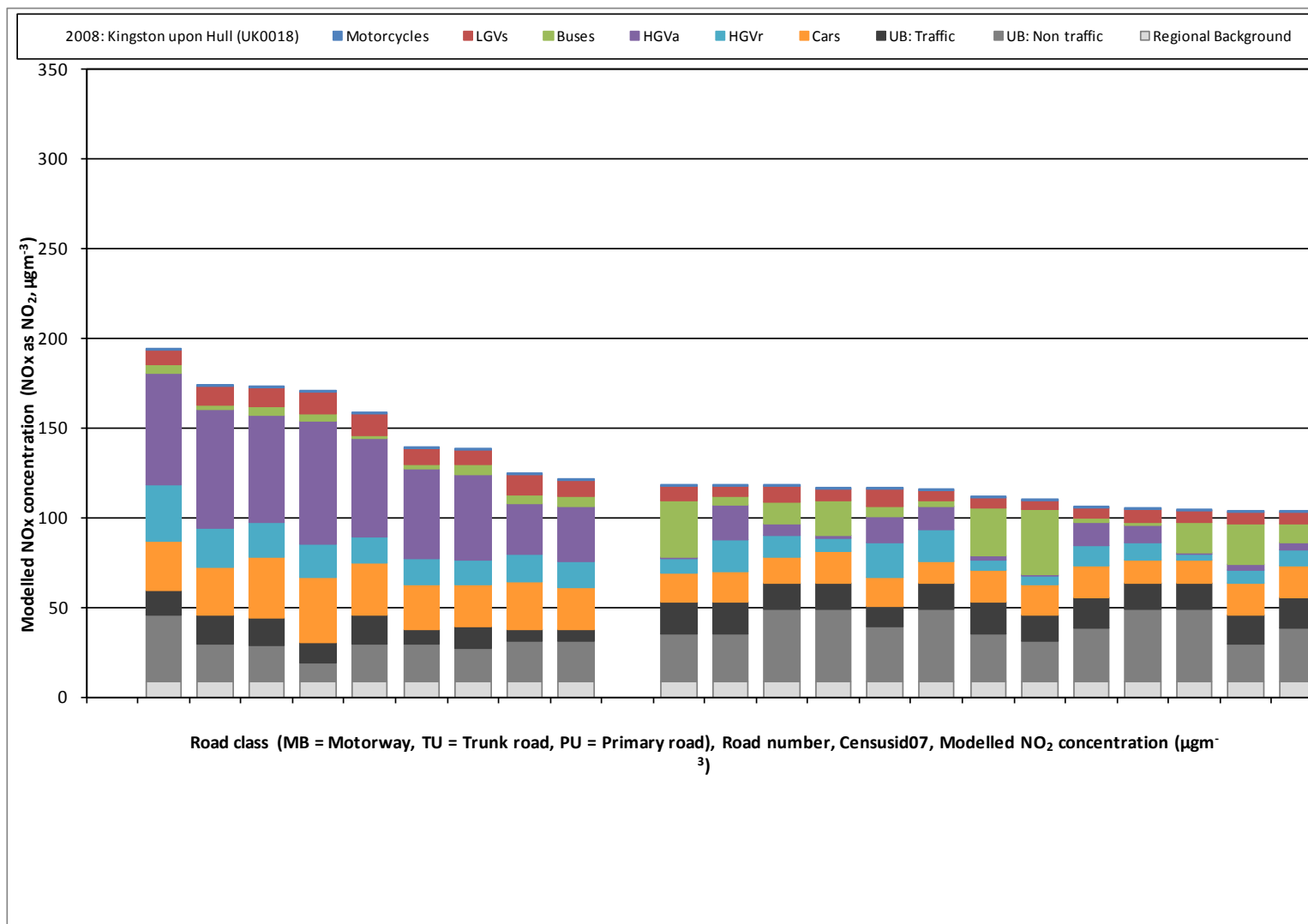
List of Annexes

Annex 1: Source apportionment graphs

Annex 2: Tables of measures

Annex 1: Source apportionment graphs

Figure A1.1 Annual mean roadside NO_x source apportionment plots for all roads exceeding the annual mean NO₂ limit value in 2008



Annex 2: Tables of measures

Table A2.1 Relevant Local Authority measures taken before or during 2010 within Kingston upon Hull (UK0018)

LA (a)	Measure code (b)	Title	Description	Other information
Kingston Upon Hull	Local_Kingston_upon_Hull_B1	Energy efficiency schemes	Energy efficiency, this is being carried out within the authority, but it is felt that we could do to develop better links and tie the measures in with other measures.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Commercial and residential sources • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_G1	Cycling and walking schemes	To promote a healthier City through improving air quality and encouraging cycling and walking. This option will also compliment those in the awareness raising section. There are a variety of measures and resources available as it has a number of other benefits such as road safety and fitness.	<ul style="list-style-type: none"> • Type: Technical; Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Medium term • Regulatory: No • Smarter Choices (c) : Yes • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_G2	Incentive schemes for car share, travel passes, etc	Incentive schemes for car share, travel passes, cycling allowances. Staff bikes	<ul style="list-style-type: none"> • Type: Economic/fiscal; Technical; Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Medium term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_C1	Promote LPG refuelling	Promote LPG refueling points	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_E1	Planning guidance for	Planning guidance for developers	<ul style="list-style-type: none"> • Type: Technical; Education/information • Sources affected: Transport; Commercial and residential

LA (a)	Measure code (b)	Title	Description	Other information
		developers		<ul style="list-style-type: none"> sources • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_A1	Low emission buses	This is on going and requirements are placed on operators for environmental vehicles	<ul style="list-style-type: none"> • Type: Technical • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_D1	Non-residential parking levy	Non-residential parking levy - Due to the resource implications to implement and Police such schemes, it was not felt practical to extend this scheme other than on a specific case by case basis.	<ul style="list-style-type: none"> • Type: Economic/fiscal; Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_G3	Green travel plans	Green Travel Plans (including school staff and pupils)	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : Yes • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_G4	Car pool schemes	A scheme was trialled by Public Transport during the recent bridge closure and was little used but is still in operation.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : Yes

LA (a)	Measure code (b)	Title	Description	Other information
				<ul style="list-style-type: none"> • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_H1	Liaison with Primary Care Trust	Liaison with Primary Care Trust for health/AQ statistics. As they are a large employer, a fleet user and health experts and as they meet the members of the public most susceptible to the impacts of poor air quality, it is felt that an expansion of the existing working arrangements and sharing of best practice, built up by the Health Education Team would be beneficial.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_H2	20mph zones	This is already being comprehensively applied across minor roads on residential estates in the City, although it was felt inappropriate to extend the scheme to main routes.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_D2	Idling vehicles legislation	Legislation exists that allows Authorities to force drivers to switch off engines if they are expected to be stationary for an extended period of time, such as at railway crossings. The aim is not for penalties or fines to be issued, but for the situation to be explained to the drivers with legal enforcement used as a last resort.	<ul style="list-style-type: none"> • Type: Economic/fiscal; Technical; Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_F1	Publish AQ data	Publish air quality data. To some extent this is already done, although it is agreed that more could be done with locally generated data.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport; Industry including heating and power production; Commercial and residential sources • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_F2	School curriculum	Raises awareness of AQ and issues	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport

LA (a)	Measure code (b)	Title	Description	Other information
				<ul style="list-style-type: none"> • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_F3	Increase awareness	This option covers all aspects of this section and utilises a variety of media including IT (web site development) and other tools to reach a wider audience. Much is related to the availability of resources, but it is felt that much can be achieved using existing in house expertise and facilities.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_H3	Links with research groups	It was suggested that links could be developed with the University, possibly to encourage research into alternative fuels. Closer contact is to be pursued, although it is debatable what benefits we could offer the University to induce partnership working.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_F4	Investigate text alerts	Systems can be created to warn people of days of poor air quality so that they can take active measures to avoid being affected. A trial in Sussex is to be reviewed and its suitability for Hull determined. Discussions are on going with neighbouring authorities regarding a regional approach	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_F5	Real time information	Real time information of Public Transport network. There are a number of schemes that have been initiated and that will be developed further, these include VMS at a number of locations and text lines to give live bus time information.	<ul style="list-style-type: none"> • Type: Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d):

LA (a)	Measure code (b)	Title	Description	Other information
Kingston Upon Hull	Local_Kingston_upon_Hull_G5	Quality bus corridors	The main arterial routes into the City have bus lanes and there are regular meetings between the Council and the bus operating companies to ensure that busses have as free a passage as is practically possible. The new transport interchange should help to continue to encourage a modal shift.	Local_zone18_KingstonUponHull_AQActionplan_1 <ul style="list-style-type: none"> • Type: Technical; Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_E2	Park and ride	A number of schemes are in existence, and it is proposed to add to these in due course. One respondent from the consultation pointed out that there could be additional benefits if this option was considered in conjunction with the options for green travel plans, and low/zero emission buses as well as real time information on public transport.	<ul style="list-style-type: none"> • Type: Technical • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_E3	Traffic free areas	The City already has a reasonable amount of pedestrian only areas which will be extended to some degree with the new developments occurring in the City Centre. A balance needs to be struck with the need for access for deliveries and the disabled.	<ul style="list-style-type: none"> • Type: Technical • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Long term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_A2	Roadside emission testing	It was felt to be an option to be investigated further as the awareness raising potential could be utilised.	<ul style="list-style-type: none"> • Type: Technical; Education/information • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_AQActionplan_1
Kingston Upon Hull	Local_Kingston_upon_Hull_H4	Tree planting and green field policy	To some extent this already occurs, but it is hoped to get some involvement in the process and use it as a tool for raising awareness as supporting the other environmental benefits. This is expected to have a low overall impact on air quality, especially in the	<ul style="list-style-type: none"> • Type: Technical • Sources affected: Transport • Spatial scale: local • Implementation date: 2008 • Reduction timescale: Short term

LA (a)	Measure code (b)	Title	Description	Other information
			short term.	<ul style="list-style-type: none"> • Regulatory: No • Smarter Choices (c) : No • Reference (d): Local_zone18_KingstonUponHull_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/NO2ten/>

