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Food & Rural Affairs

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## **Draft Air Quality Plan for the achievement of EU air quality limit value for nitrogen dioxide (NO<sub>2</sub>) in Liverpool Urban Area (UK0006)**

**September 2015**



Llywodraeth Cymru  
Welsh Government



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## Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Introduction</b>  | <b>3</b>  |
| 1.1      | This document . . . . .  | 3         |
| 1.2      | Context . . . . .  | 3         |
| 1.3      | Zone status . . . . .  | 3         |
| 1.4      | Plan Structure . . . . .   | 3         |
| <b>2</b> | <b>General information about the Zone</b>                        | <b>4</b>  |
| 2.1      | Administrative information . . . . .                             | 4         |
| 2.2      | Assessment details . . . . .                                     | 6         |
| 2.3      | Reporting Under European Directives . . . . .                    | 8         |
| <b>3</b> | <b>Overall Picture for 2013 Reference Year</b>                   | <b>8</b>  |
| 3.1      | Introduction . . . . .   | 8         |
| 3.2      | Reference year: NO <sub>2</sub> _UK0006_Annual_1 . . . . .       | 8         |
| <b>4</b> | <b>Measures</b>  | <b>13</b> |
| 4.1      | Introduction . . . . .   | 13        |
| 4.2      | Source apportionment . . . . .                                   | 13        |
| 4.3      | Measures . . . . .   | 13        |
| 4.4      | Measures timescales . . . . .                                    | 14        |
| <b>5</b> | <b>Baseline Model projections</b>                                | <b>14</b> |
| 5.1      | Overview of model projections . . . . .                          | 14        |
| 5.2      | Baseline projections: NO <sub>2</sub> _UK0006_Annual_1 . . . . . | 14        |
|          | <b>Annexes</b>   | <b>19</b> |
| A        | References . . . . .   | 19        |
| B        | Source apportionment graphs . . . . .                            | 20        |
| C        | Tables of measures . . . . .                                     | 22        |

# 1 Introduction

## 1.1 This document

This document is the Liverpool Urban Area agglomeration zone (UK0006) updated air quality plan for the achievement of the EU air quality limit values for nitrogen dioxide (NO<sub>2</sub>). This is an update to the air quality plan published in September 2011 (<http://uk-air.defra.gov.uk/library/no2ten/>).

This plan presents the following information:

- General information regarding the Liverpool Urban Area agglomeration zone
- Details of the NO<sub>2</sub> exceedance situation within the Liverpool Urban Area agglomeration zone
- Details of local air quality measures that have been implemented, will be implemented or are being considered for implementation in this agglomeration zone.

This air quality plan for the Liverpool Urban Area agglomeration zone should be read in conjunction with the separate UK overview document. 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 document show how the UK will ensure that compliance with the NO<sub>2</sub> limit values is achieved in the shortest possible time.

## 1.2 Context

Two NO<sub>2</sub> limit values for the protection of human health have been set in the Air Quality Directive (2008/50/EC). These are:

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

The Air Quality Directive stipulates that compliance with the NO<sub>2</sub> limit values will be achieved by 01/01/2010.

## 1.3 Zone status

The assessment undertaken for the Liverpool Urban Area agglomeration zone indicates that the annual limit value was exceeded in 2013 but is likely to be achieved before 2020 through the introduction of measures included in the baseline.

## 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<sub>2</sub> levels in this agglomeration zone for the 2013 reference year of this air quality plan. This includes 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 2013 is given in section 4.

Baseline modelled projections for 2020, 2025 and 2030 for each exceedance situation are presented in section 5. The baseline projections presented here include, where possible, the impact of measures that have already been taken and measures for which the relevant authority has made a firm commitment to take the measure(s). However, it has not been possible to quantify the impact of all the measures. This section therefore also explains which measures have been quantified, and hence included in the model projections, and which measures have not been quantified.

## 2 General information about the Zone

### 2.1 Administrative information

Zone name: Liverpool Urban Area

Zone code: UK0006

Type of zone: agglomeration zone

Reference year: 2013

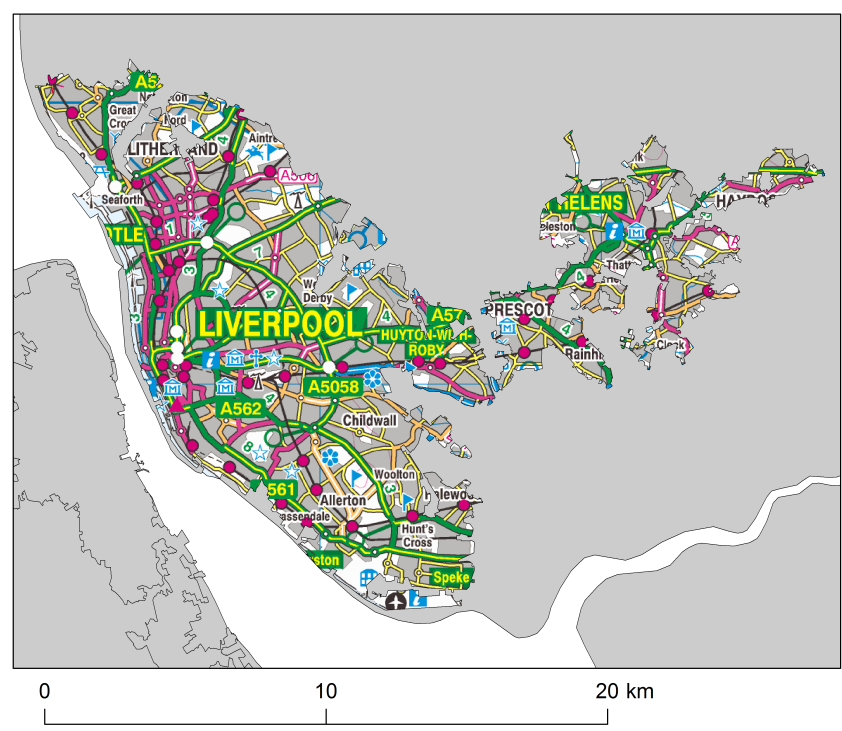
Extent of zone: Figure 1 shows the area covered by the Liverpool Urban Area agglomeration zone.

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

1. Knowsley Metropolitan Borough Council
2. Liverpool City Council
3. Sefton Metropolitan Borough Council
4. St Helens Metropolitan Borough Council

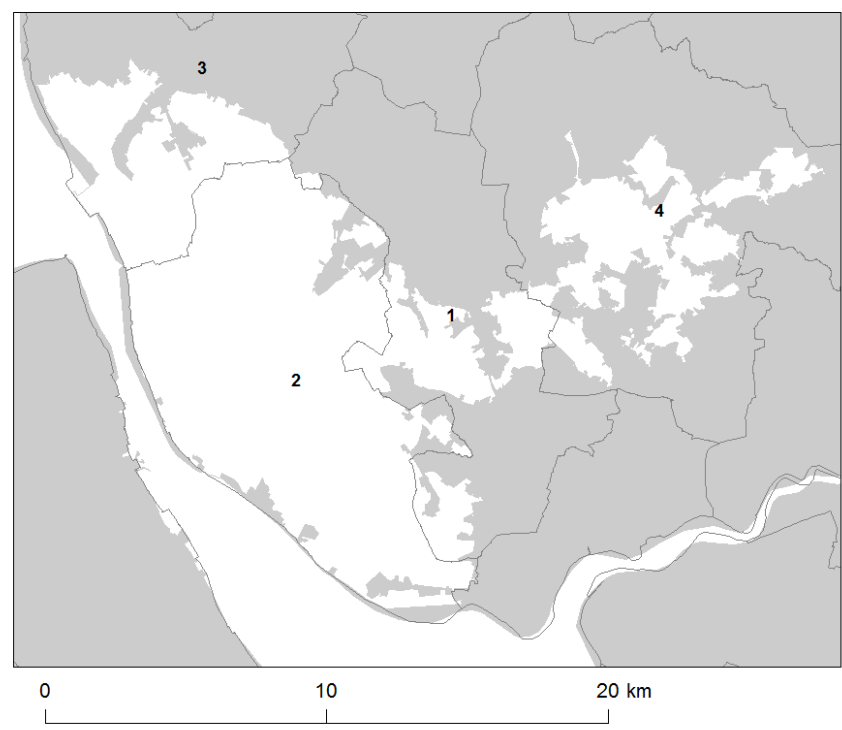
(Note: Local Authority boundaries do not necessarily coincide with zone boundaries. Hence Local Authorities may be listed within more than one zone plan.)

**Figure 1: Map showing the extent of the Liverpool Urban Area agglomeration zone (UK0006).**



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**Figure 2: Map showing Local Authorities within the Liverpool Urban Area agglomeration zone (UK0006).**



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## 2.2 Assessment details

### Measurements

NO<sub>2</sub> measurements in this zone were available in 2013 from the following national network monitoring stations (NO<sub>2</sub> data capture for each station in 2013 shown in brackets):

1. Liverpool Queen's Drive Roadside GB0922A (64%)
2. Liverpool Speke GB0777A (95%)

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

### Modelling

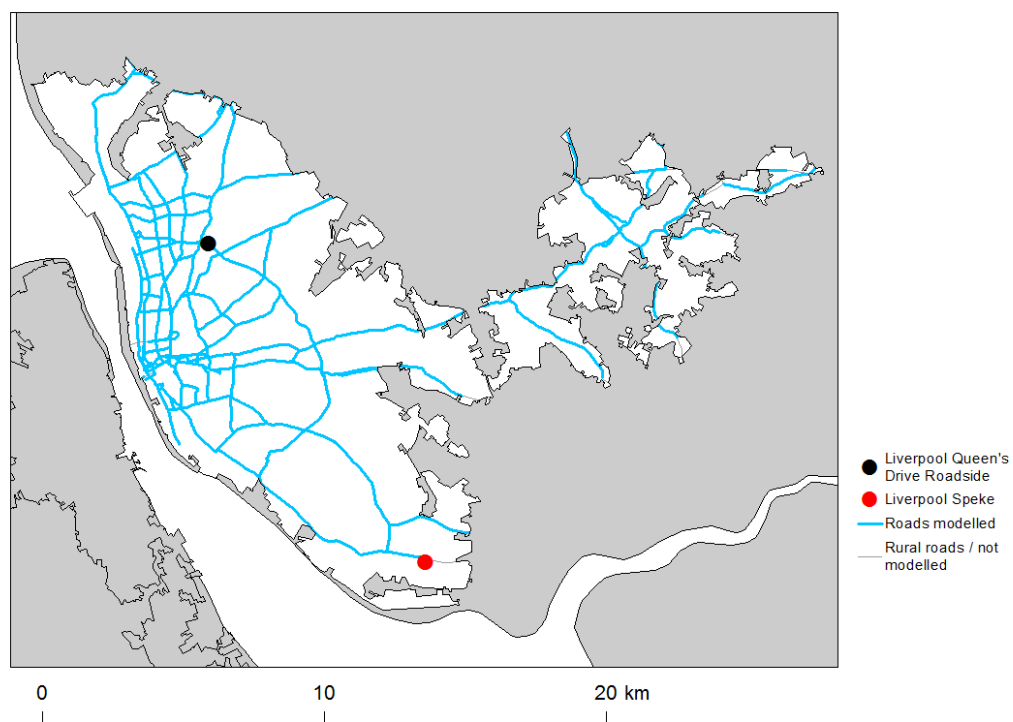
Modelling for the 2013 reference year has been carried out for the whole of the UK. This modelling covers the following extent within this zone:

- Total background area within zone (approx): 198 km<sup>2</sup>
- Total population within zone (approx): 744,225 people
- Total road length where an assessment of NO<sub>2</sub> concentrations have been made: 210 km in 2013 (and similar lengths in previous years)

### Zone maps

Figure 3 presents the location of the NO<sub>2</sub> monitoring stations within this zone for 2013 and the roads for which NO<sub>2</sub> concentrations have been modelled. NO<sub>2</sub> concentrations at background locations have been modelled across the entire zone at a 1 x 1 km<sup>2</sup> resolution.

**Figure 3: Map showing the location of the NO<sub>2</sub> monitoring stations with valid data in 2013 and roads where concentrations have been modelled within the Liverpool Urban Area (UK0006) agglomeration zone.**



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## 2.3 Reporting Under European Directives

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

In addition, the UK has reported on air quality plans and programmes (Decision 2004/224/EC) <http://cdr.eionet.europa.eu/gb/eu/aqpp>.

# 3 Overall Picture for 2013 Reference Year

## 3.1 Introduction

There are two limit values for the protection of health for NO<sub>2</sub>. These are:

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

Within the Liverpool Urban Area agglomeration zone the annual limit value was exceeded in 2013. Hence, one exceedance situation for this zone has been defined, NO<sub>2</sub>\_UK0006\_Annual\_1, which covers exceedances of the annual limit value. This exceedance situation is described below.

## 3.2 Reference year: NO<sub>2</sub>\_UK0006\_Annual\_1

The NO<sub>2</sub>\_UK0006\_Annual\_1 exceedance situation covers all exceedances of the annual mean limit value in the Liverpool Urban Area agglomeration zone in 2013.

Compliance with the annual limit value in this exceedance situation has been assessed using a combination of air quality measurements and modelling. Table 1 presents measured annual concentrations at national network stations in this exceedance situation since the 1st Daughter Directive (1999/30/EC) came into force in 2001. This shows that there were no measured exceedances of the annual limit value in this zone in 2013. Table 2 summarises modelled annual mean NO<sub>2</sub> concentrations in this exceedance situation for the same time period. This table shows that, in 2013, 38.6 km of road length was modelled to exceed the annual limit value. There were no modelled background exceedances of the annual limit value. Maps showing the modelled annual mean NO<sub>2</sub> concentrations for 2013 at background and at roadside locations are presented in Figures 4 and 5 respectively. All modelled exceedances of the annual limit value are coloured orange or red in the maps.

The maximum measured concentration in the zone varies due to changes in emissions and varying meteorology in different years. However, the models are also updated each year to take into account the most up-to-date science, so the modelled results for different years may not be directly comparable.

The modelling carried out for this exceedance situation has also been used to determine the annual mean NO<sub>x</sub> source apportionment for all modelled locations. Table 3 presents summary source apportionment information in this exceedance situation.

Table 3 summarises the modelled NO<sub>x</sub> source apportionment for the section of road with the highest modelled NO<sub>2</sub> concentration in this exceedance situation in 2013. This is important information because it shows which sources need to be tackled at the location with the largest compliance gap in the exceedance situation. It is

not possible to calculate an unambiguous source apportionment for annual mean NO<sub>2</sub> concentrations for the reasons discussed in the UK Technical Report<sup>1</sup>. Therefore no NO<sub>2</sub> source apportionment is provided.

Figure B.1 in Annex B presents the annual mean NO<sub>x</sub> source apportionment for each section of road within the NO<sub>2</sub>\_UK0006\_Annual\_1 exceedance situation (i.e. the source apportionment for all exceeding roads only) in 2013. Roads have been grouped into motorways, primary roads and trunk roads in this figure.

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<sup>1</sup>Technical report to be finalised for the final plan.

**Table 1: Measured annual mean NO<sub>2</sub> concentrations at national network stations in NO<sub>2</sub>\_UK0006\_Annual\_1 for 2001 onwards,  $\mu\text{gm}^{-3}$  (a). Data capture shown in brackets.**

| Site name (EOI code)                       | 2001    | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008     | 2009    | 2010    | 2011    | 2012    | 2013    |
|--|---------|---------|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|
| Liverpool Centre (GB0594A)                 | 38 (93) | 36 (68) |         |         |         |         |         |          |         |         |         |         |         |
| Liverpool Queen's Drive Roadside (GB0922A) |         |         |         |         |         |         |         | 40 (100) | 38 (99) | 37 (99) | 35 (99) | 30 (56) | 34 (64) |
| Liverpool Speke (GB0777A)                  |         |         | 27 (57) | 23 (98) | 24 (98) | 22 (92) | 24 (96) | 22 (95)  | 22 (94) | 30 (94) | 24 (97) | 25 (86) | 23 (95) |

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

**Table 2: Annual mean NO<sub>2</sub> model results in NO<sub>2</sub>\_UK0006\_Annual\_1 for 2001 onwards.**

|  | 2001  | 2002 | 2003  | 2004  | 2005  | 2006  | 2007  | 2008 | 2009 | 2010  | 2011 | 2012 | 2013 |
|--|-------|------|-------|-------|-------|-------|-------|------|------|-------|------|------|------|
| Road length exceeding (km)                                 | 175.1 | 65.9 | 155.8 | 120.1 | 121.0 | 120.9 | 129.9 | 72.3 | 67.3 | 100.5 | 64.5 | 60.3 | 38.6 |
| Background exceeding (km <sup>2</sup> )                    | 0     | 0    | 0     | 0     | 0     | 0     | 0     | 0    | 0    | 1     | 0    | 0    | 0    |
| Maximum modelled concentration ( $\mu\text{gm}^{-3}$ ) (a) | 63.2  | 53.3 | 63.3  | 67.9  | 84.1  | 76.2  | 87.4  | 81.7 | 78.3 | 88.0  | 79   | 80   | 57   |

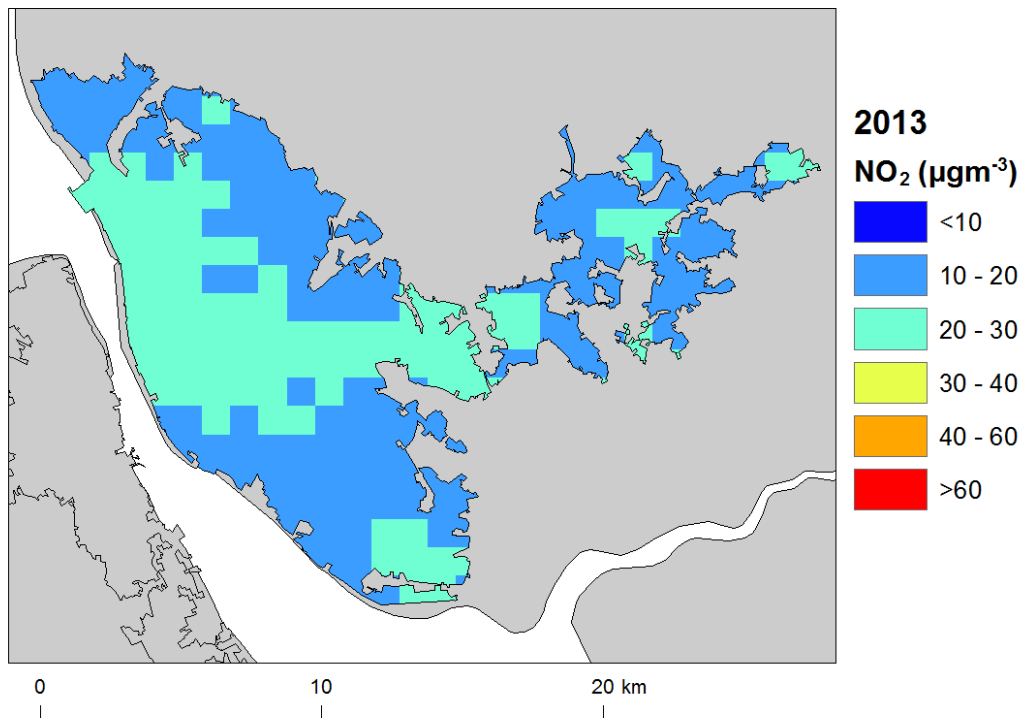
(a) Annual Mean Limit Value =  $40 \mu\text{gm}^{-3}$

**Table 3: Modelled annual mean NOx source apportionment at the traffic count point with the highest modelled concentration in 2013 in NO2\_UK0006\_Annual\_1 ( $\mu\text{gm}^{-3}$ ) (traffic count point 48332 on the A59; OS grid (m): 334820, 391150).**

| Spatial scale   | Component   | Concentration at highest road link (a) |
|---|---|--|
| Regional background sources NOx (i.e. contributions from distant sources of > 30 km from the receptor). | Total   | 7.9                                    |
|   | From within the UK  | 4.1                                    |
|   | From transboundary sources (includes shipping and other EU member states) | 3.8                                    |
| Urban background sources NOx (i.e. sources located within 0.3 - 30 km from the receptor).               | Total   | 33.4                                   |
|   | From road traffic sources   | 25.4                                   |
|   | From industry (including heat and power generation)                       | 2.3                                    |
|   | From agriculture  | NA                                     |
|   | From commercial/residential sources                                       | 1.5                                    |
|   | From shipping   | 1.8                                    |
|   | From off road mobile machinery  | 2.2                                    |
|   | From natural sources  | NA                                     |
|   | From transboundary sources  | NA                                     |
| Local sources NOx (i.e. contributions from sources < 0.3 km from the receptor).                         | From other urban background sources                                       | 0.2                                    |
|   | Total   | 108.7                                  |
|   | From petrol cars  | 8.9                                    |
|   | From diesel cars  | 31.9                                   |
|   | From HGV rigid  | 9.0                                    |
|   | From HGV articulated  | 3.1                                    |
|   | From buses  | 41.1                                   |
|   | From petrol LGVs  | 0.2                                    |
|   | From diesel LGVs  | 14.3                                   |
|   | From motorcycles  | 0.1                                    |
|   | From London taxis   | 0.0                                    |
| Total NOx (i.e. regional background + urban background + local components)                              |   | 150.0                                  |
| Total NO <sub>2</sub> (i.e. regional background + urban background + local components)                  |   | 57                                     |

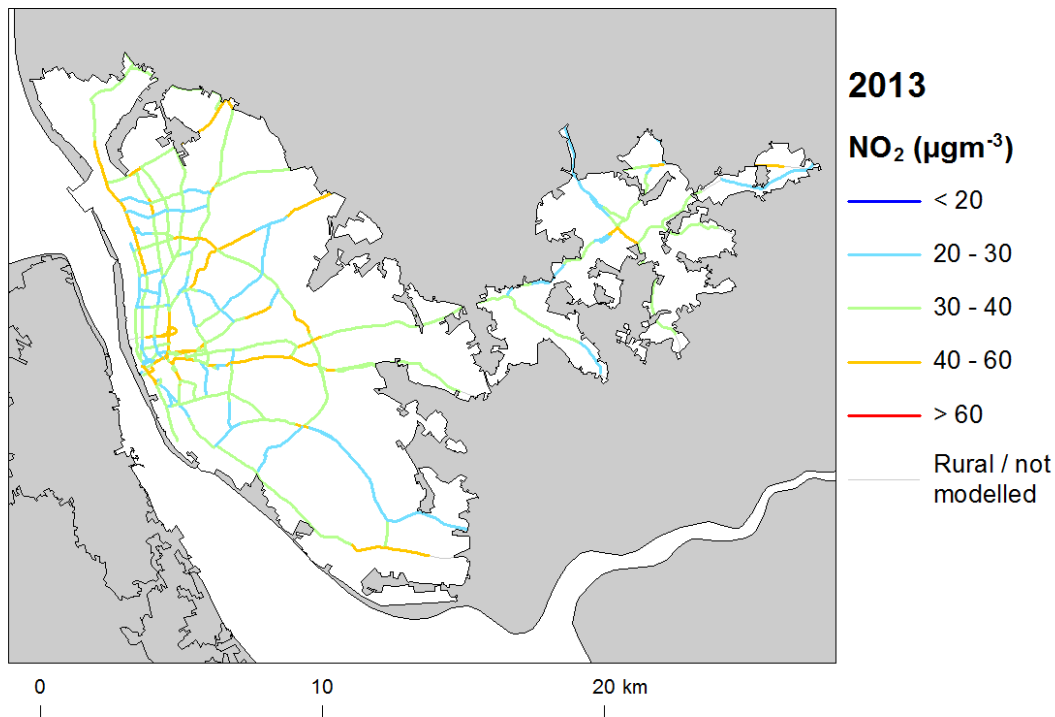
(a) Components are listed with NOx concentration of NA when there is no source from this sector.

**Figure 4: Map of modelled background annual mean NO<sub>2</sub> concentrations 2013. Modelled exceedances of the annual limit value are shown in orange and red.**



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**Figure 5: Map of modelled roadside annual mean NO<sub>2</sub> concentrations 2013. Modelled exceedances of the annual limit value are shown in orange and red.**



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## 4 Measures

### 4.1 Introduction

This section (section 4) gives details of measures that address exceedances of the NO<sub>2</sub> limit values within Liverpool Urban Area agglomeration zone. This includes both measures that have already been taken and measures for which there is a firm commitment that they will be taken.

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

### 4.2 Source apportionment

It is important to understand which sources are responsible for causing the exceedance in order to most effectively tailor measures to address the NO<sub>2</sub> exceedance situation described in section 3 above. This can be achieved by considering the source apportionment for the exceedance situation, also presented in section 3. A summary of what the source apportionment shows and the implications for which measures would therefore be appropriate is given here.

Local road traffic was the dominant source in this exceedance location in the reference year. The largest contribution was from buses and cars contributing about 27% each to total NO<sub>x</sub> on the road with the highest concentration. Buses and on some roads cars, articulated HGVs and rigid HGVs were important sources on the primary roads with the highest concentrations. Articulated HGVs and cars were important sources on the trunk roads with the highest concentrations. For all road links concentrations of NO<sub>x</sub> from diesel cars were approximately four times greater than NO<sub>x</sub> emissions from petrol cars. NO<sub>x</sub> concentrations from petrol LGVs are a small component of total NO<sub>x</sub> concentrations and less than 2% of total NO<sub>x</sub> from LGVs.

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<sub>2</sub> 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](http://ec.europa.eu/environment/air/index_en.htm)). Details of national measures are given in the UK overview document.

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

Measures by local authorities in the Liverpool Urban Area include, for example, a low emission strategy that includes policies on reducing congestion and pollution. The intention is to encourage a shift away from using cars

e.g. to cycling and walking for travelling to work or school. There is action underway to improve the emission standard of buses via voluntary bus quality partnerships. Freight and taxi quality partnership initiatives are also in place.

The Local Transport Plan for the area also promotes the implementation of a low emissions strategy. The aim is to improve air quality and improve health and provide a stimulus to the creation of new technologies in support of a Regional low carbon economy.

## 4.4 Measures timescales

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

Local Authorities report on progress with the implementation of their action plans annually and review action plan measures regularly. Information on local measures was collected in February/March 2015. Hence, any Local Authority action plans and measures adopted by Local Authorities after this time have not been included in this air quality plan.

The reference year for this air quality plan is 2013. Hence where measures started and finished before 2013, then the improvement in air quality resulting from these measures will have already taken place before the reference year and the impact of these measures will have been included in the assessment where the measure has had an impact on the statistics used to compile the emission inventory. Many measures started before the reference year and will continue to have a beneficial impact on air quality well beyond the reference year. Hence measures with a start date before 2013 and an end date after 2013 may have an impact on concentrations in the reference year and a further impact in subsequent years. Where the Status column in Annex C is 'Implementation', this shows that this measure is already underway or that there is a commitment for this measure to go ahead. Where the Status is 'Planning', 'Preparation' or 'Other' the level of commitment is less clear and it is possible some of these measures may not go ahead.

# 5 Baseline Model projections

## 5.1 Overview of model projections

Model projections for 2020, 2025 and 2030, starting from the 2013 reference year described in section 3, have been calculated in order to determine when compliance with the NO<sub>2</sub> limit values is likely to be achieved on the basis of EU, regional and local measures currently planned. Details of the methods used for the baseline emissions and projections modelling are provided in the UK technical report.

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

The impacts of the individual Local Authority measures have not been explicitly included in the baseline model projections. However, measures may have been included implicitly if they have influenced the traffic counts for 2012 (used as a basis for the compilation of the emission inventory) or in the traffic activity projections to 2020 and beyond (used to calculate the emissions projections). It should be recognised that these measures will have a beneficial impact on air quality, even if it has not been possible to quantify this impact here.

## 5.2 Baseline projections: NO<sub>2</sub>\_UK0006\_Annual\_1

Table 4 presents summary results for the baseline model projections for 2020, 2025 and 2030 for the NO<sub>2</sub>\_UK0006\_Annual\_1 exceedance situation. This shows that the maximum modelled annual mean NO<sub>2</sub>

concentration predicted for 2020 in this exceedance situation is  $36 \mu\text{gm}^{-3}$ . Hence, the model results suggest that compliance with the  $\text{NO}_2$  annual limit value is likely to be achieved before 2020 under baseline conditions in this exceedance situation.

Figures 6 and 7 show maps of projected annual mean  $\text{NO}_2$  concentrations in 2020, 2025 and 2030 for background and roadside locations respectively. Maps for 2013 are also presented here for reference.

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



**Table 4: Annual mean NO<sub>2</sub> model results in NO<sub>2</sub>\_UK0006\_Annual\_1.**

|  | 2013 | 2020 | 2025 | 2030 |
|--|------|------|------|------|
| Road length exceeding (km)   | 38.6 | 0.0  | 0.0  | 0.0  |
| Background exceeding (km <sup>2</sup> )                                    | 0    | 0    | 0    | 0    |
| Maximum modelled concentration NO <sub>2</sub><br>(μgm <sup>-3</sup> ) (a) | 57   | 36   | 28   | 25   |
| Corresponding modelled concentration NOx<br>(μgm <sup>-3</sup> ) (b)       | 150  | 83   | 58   | 54   |

(a) Annual Mean Limit Value = 40 μgm<sup>-3</sup>

(b) NOx is recorded here for comparison with the NOx source apportionment graphs for 2013 presented in Annex B of this plan. Limit values for EU directive purposes are based on NO<sub>2</sub>.

Figure 6: Background baseline projections of annual mean NO<sub>2</sub> concentrations in 2020, 2025 and 2030. 2013 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.

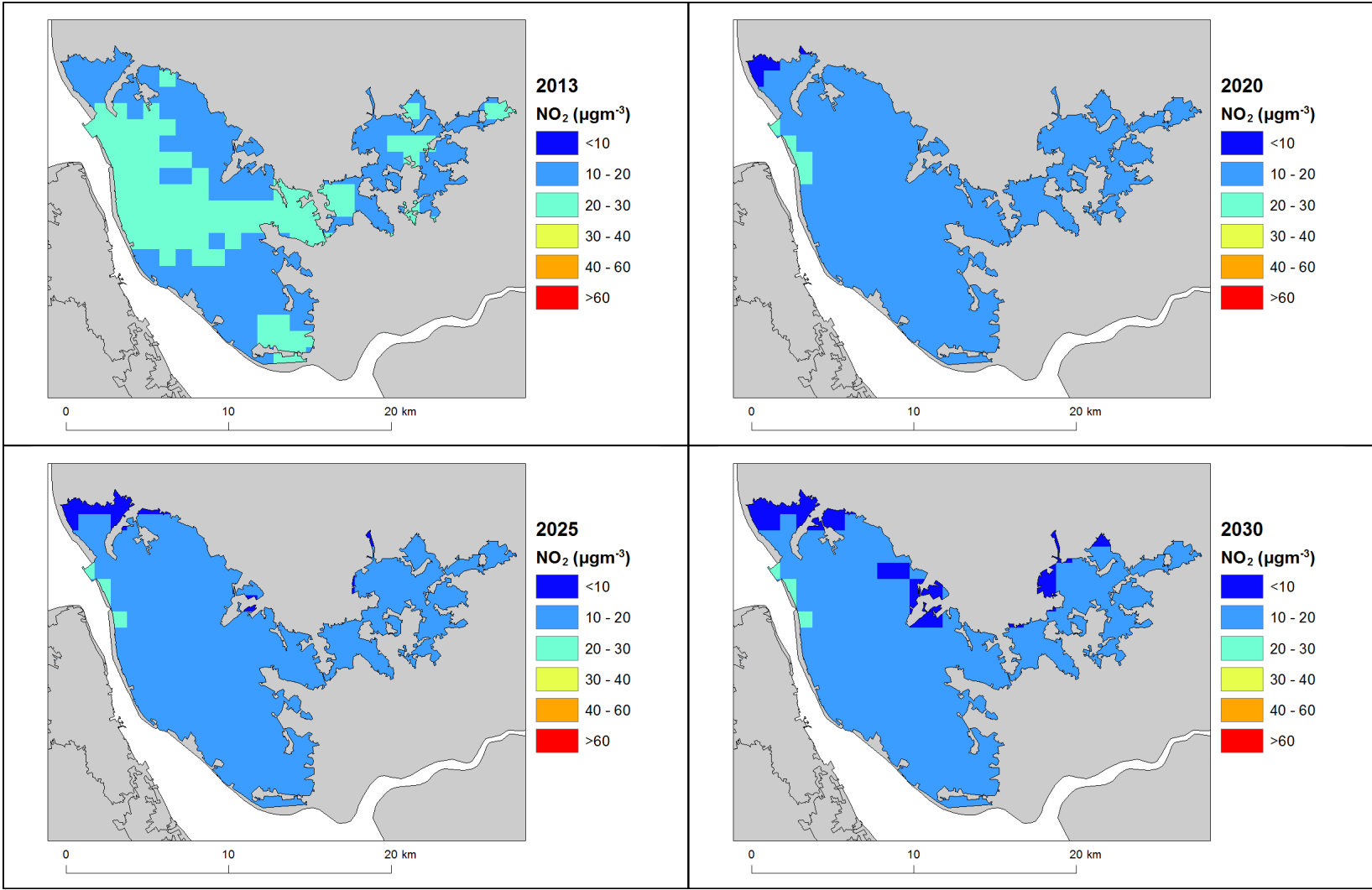
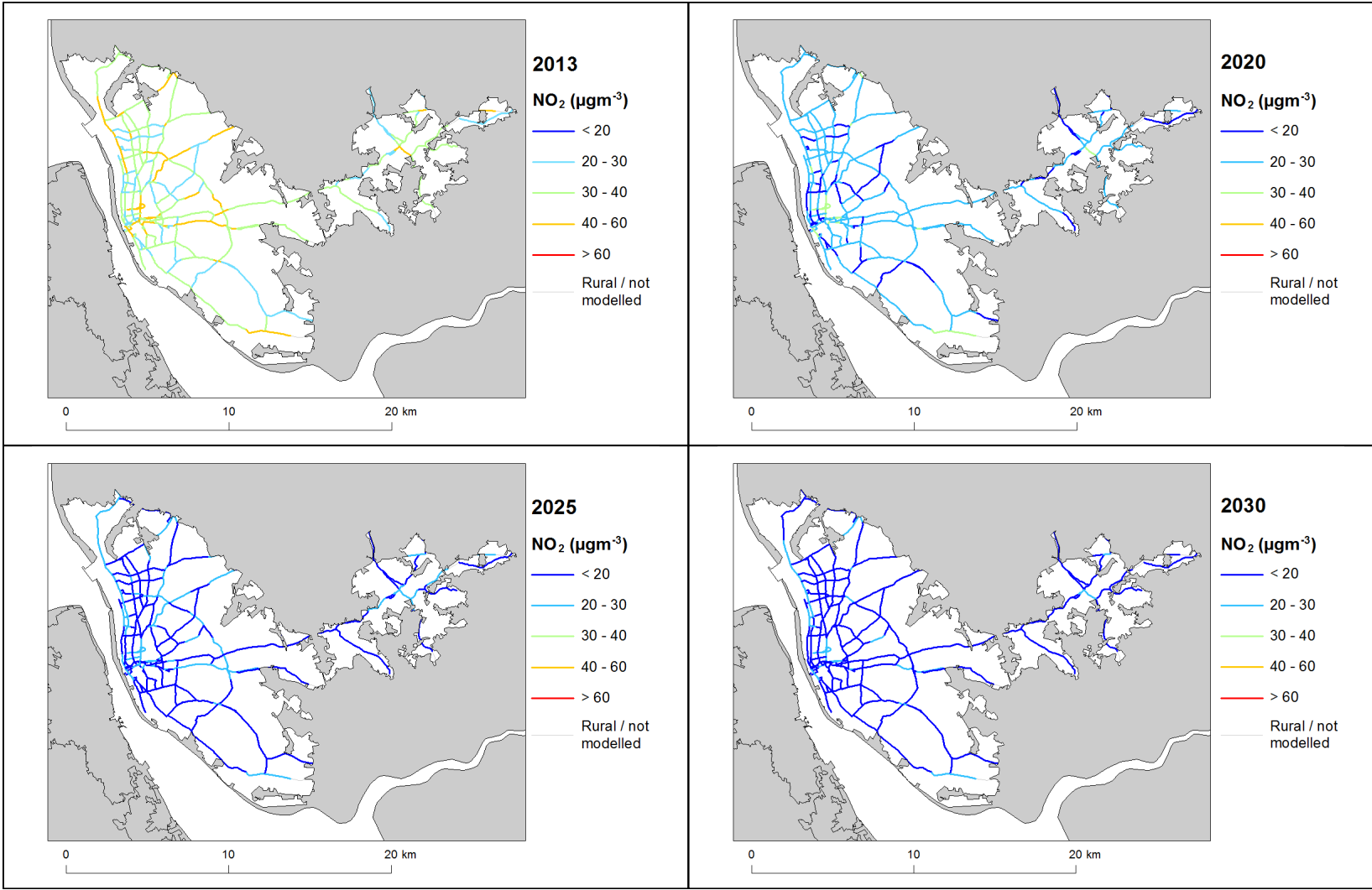


Figure 7: Roadside baseline projections of annual mean NO<sub>2</sub> concentrations in 2020, 2025 and 2030. 2013 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.



# Annexes

## A References

Air Quality Expert Group (AQEG, 2004). Nitrogen Dioxide in the United Kingdom. <http://uk-air.defra.gov.uk/library/aqeg/publications>

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

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

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

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

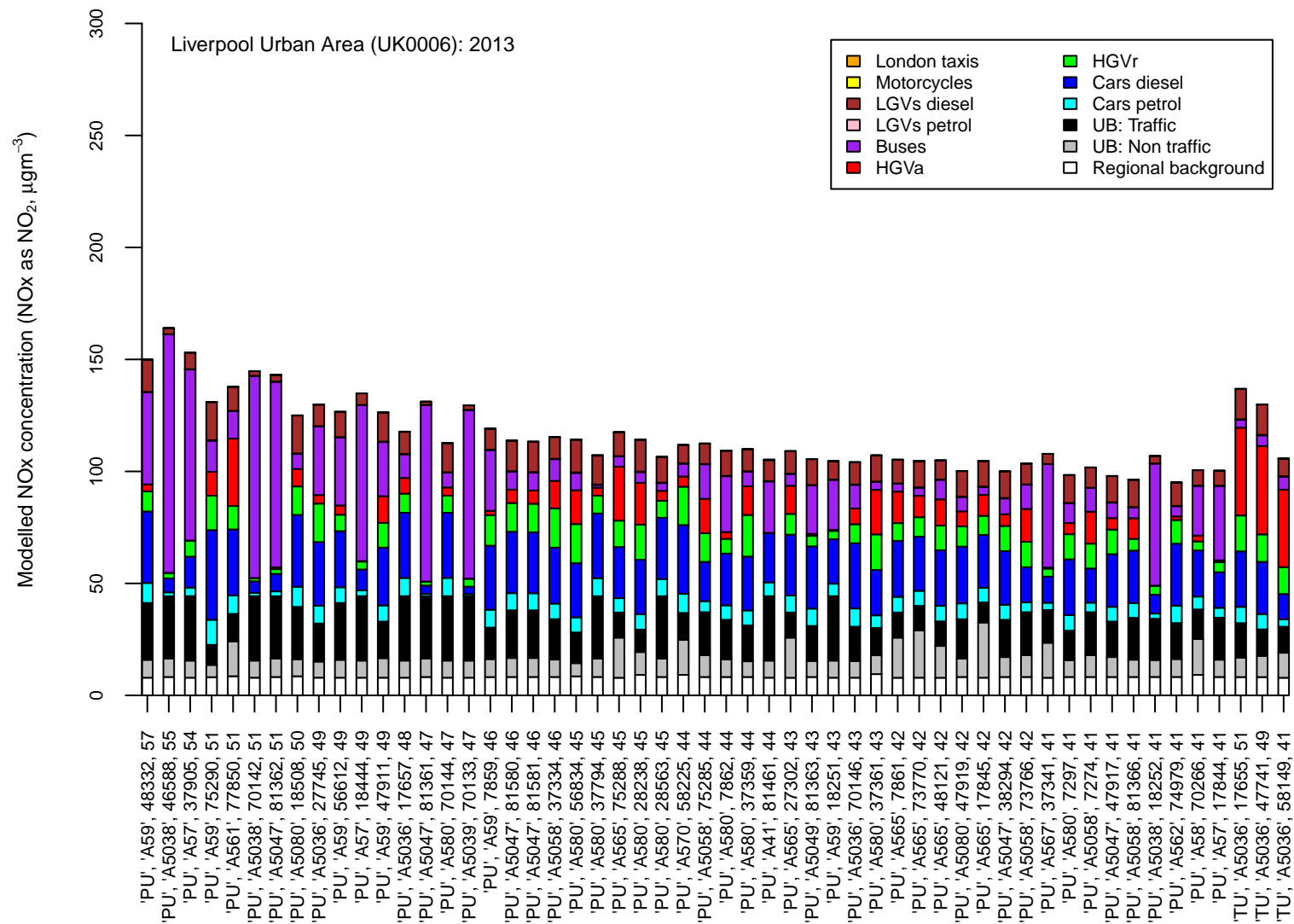
Air Quality Directive 2008/50/EC. Council Directive 2008/50/EC, of 21 May 2008. On ambient air quality and cleaner air for Europe. From the Official Journal of the European Union, 11.6.2008, En series, L152/1

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.

## **B Source apportionment graphs**

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Figure B.1: Annual mean roadside NO<sub>x</sub> source apportionment plots for all roads exceeding the annual mean NO<sub>2</sub> limit value in 2013.



Road class (MU = motorway, PU = primary road, TU = trunk road), road number, censusid 12 and modelled NO<sub>2</sub> concentration ( $\mu\text{gm}^{-3}$ )

**C   Tables of measures**

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**Table C.1 Relevant Local Authority measures within Liverpool Urban Area (UK0006)**

| Measure code                                    | Description                | Focus   | Classification                                    | Status         | Other information  |
|---|----------------------------|---|---|----------------|--|
| Sefton Metropolitan Borough Council_AQMA 1 No 1 | A565 RMS Action Plan       | Reduce emissions by measures in the A565 Route Management Strategy Action Plan to ease congestion | Traffic planning and management:<br>Other measure | Implementation | Start date: 2009<br>Expected end date: 2012<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Compliance with the PM10 air quality Objectives.<br>Target emissions reduction: Difficult to estimate no target set                                  |
| Sefton Metropolitan Borough Council_AQMA 2 No 1 | Port booking system        | Reduce emissions using efficient HGV booking system   | Traffic planning and management:<br>Other measure | Implementation | Start date: 2009<br>Expected end date: 2009<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Feedback on effectiveness of booking system via Port liaison meetings.<br>Target emissions reduction: Difficult to estimate no target set            |
| Sefton Metropolitan Borough Council_AQMA 2 No 2 | Port mitigation            | Offset emissions from HGVs due to port expansion  | Traffic planning and management:<br>Other measure | Planning       | Start date: 2016<br>Expected end date: 2022<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Compliance with the NO2 air quality Objectives. Measure implemented to timescale.<br>Target emissions reduction: Difficult to estimate no target set |
| Sefton Metropolitan Borough Council_AQMA 2 No 3 | EcoStars fleet recognition | Reduce emissions from HGVs using port access routes   | Other measure: Other measure                      | Implementation | Start date: 2013<br>Expected end date: 2015<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of operators recruited to scheme<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_AQMA 3 No 1 | Hurry Call                 | Reduce emissions by facilitating HGVs passage through traffic lights on incline at Millers Bridge | Traffic planning and management:<br>Other measure | Implementation | Start date: 2011<br>Expected end date: 2011<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of activations of hurry call outside peak hours<br>Target emissions reduction: Difficult to estimate no target set                            |



| Measure code                                    | Description                      | Focus   | Classification   | Status         | Other information  |
|---|----------------------------------|---|--|----------------|--|
| Sefton Metropolitan Borough Council_AQMA 3 No 2 | Regulatory control port industry | Reduce dust emissions from Port Industrial processes  | Permit systems and economic instruments: Other measure | Implementation | Start date: 2011<br>Expected end date: 2011<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Compliance results from Local Authority and Environment Agency site inspection visits to permitted industrial sites within the Port of Liverpool and the number of exceedences of the PM10 daily mean standard when predominantly north westerly winds.<br>Target emissions reduction: Difficult to estimate no target set |
| Sefton Metropolitan Borough Council_AQMA 4 No 1 | A565 RMS Action Plan             | Reduce emissions by measures in A565 Route Management Strategy Action Plan to ease congestion | Traffic planning and management: Other measure         | Implementation | Start date: 2009<br>Expected end date: 2016<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Compliance with the NO2 air quality Objectives. RMS actions implemented to timescale.<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_AQMA 5 No 1 | Port mitigation                  | Offset emissions from HGVs due to port expansion  | Traffic planning and management: Other measure         | Planning       | Start date: 2016<br>Expected end date: 2022<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Compliance with the NO2 air quality Objectives.<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_AQMA 5 No 2 | EcoStars fleet recognition       | Reduce emissions from HGVs using port access routes   | Other measure: Other measure                           | Implementation | Start date: 2013<br>Expected end date: 2015<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of operators recruited to scheme<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_GM1         | Optimisation of SCOOT            | Reduce emissions by optimising SCOOT system   | Traffic planning and management: Other measure         | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Optimisation of SCOOT<br>Target emissions reduction: Difficult to estimate no target set   |

| Measure code                            | Description                 | Focus  | Classification  | Status         | Other information   |
|---|-----------------------------|--|---|----------------|---|
| Sefton Metropolitan Borough Council_GM2 | AQ information using VMS    | Reduce emissions using message boards to ease congestion | Public information and Education:<br>Other mechanisms                         | Implementation | Start date: 2013<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Ensure system operating effectively<br>Target emissions reduction: Difficult to estimate no target set  |
| Sefton Metropolitan Borough Council_GM3 | Work place tavel plans      | Reduce emissions through travel plans                    | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of work place travel plans implemented<br>Target emissions reduction: Difficult to estimate no target set  |
| Sefton Metropolitan Borough Council_GM4 | School travel plans         | Reduce emissions through travel plans                    | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Percentage of schools in Sefton with a travel plan.<br>Target emissions reduction: Difficult to estimate no target set  |
| Sefton Metropolitan Borough Council_GM5 | Encourage walking & cycling | Reduce emissions by encouraging cycling and walking      | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Increase in participation.<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_GM6 | Land use planning system    | Mitigate emissions through planning system               | Other measure: Other measure  | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Other, please specify<br>Indicator: Percentage of planning permissions granted where the submitted air quality assessment shows no action was required or the air quality impact of a development was mitigated.<br>Target emissions reduction: Difficult to estimate no target set |

| Measure code                             | Description                    | Focus  | Classification  | Status         | Other information   |
|--|--------------------------------|--|---|----------------|---|
| Sefton Metropolitan Borough Council_GM7  | Low Emission Strategy measures | Mitigate/reduce emissions through low emissions strategies | Other measure: Other measure  | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of LES measures implemented<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_GM8  | Tree planting                  | Reduce emissions by planting trees                         | Other measure: Other measure  | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of trees planted within AQMA. Compliance with the PM10 air quality Objectives<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_GM9  | AQ awareness                   | Reduce emissions through awareness information & education | Public information and Education: Internet  | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Maintenance of Sefton Council air quality website. Number of AQ awareness events held.<br>Target emissions reduction: Difficult to estimate no target set |
| Sefton Metropolitan Borough Council_GM10 | Freight Quality Partnership    | Reduce emissions from freight                              | Traffic planning and management: Freight transport measure                          | Implementation | Start date: 2010<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of meetings held. Number of AQ initiatives undertaken<br>Target emissions reduction: Difficult to estimate no target set                           |
| Sefton Metropolitan Borough Council_GM11 | Taxi Quality Partnership       | Reduce emissions from taxis                                | Permit systems and economic instruments: Introduction/increase of environment taxes | Implementation | Start date: 2013<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of operators participating<br>Target emissions reduction: Difficult to estimate no target set  |

| Measure code                                    | Description   | Focus   | Classification  | Status         | Other information   |
|---|---|---|---|----------------|---|
| Sefton Metropolitan Borough Council_AQMA 1 No 2 | Intensive road cleaning/pavement washing  | Reduce dust resuspension  | Traffic planning and management:<br>Other measure             | Implementation | Start date: 2011<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Comparison of ratio of PM10 levels at site within AQMA to background site<br>Target emissions reduction: Difficult to estimate no target set  |
| Sefton Metropolitan Borough Council_AQMA 2 No 2 | ANPR study  | Gain information on HGV fleet using A5036 to inform action plan | Traffic planning and management:<br>Other measure             | Implementation | Start date: 2012<br>Expected end date: 2012<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Analysis of information and interpretation of data to further inform Action Plan.<br>Target emissions reduction: Information gathering exercise   |
| Sefton Metropolitan Borough Council_AQMA 3 No 3 | Intensive road cleaning/pavement washing  | Reduce dust resuspension  | Traffic planning and management:<br>Other measure             | Implementation | Start date: 2010<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Industry including heat and power production<br>Indicator: Comparison of ratio of PM10 levels at site within AQMA to background site<br>Target emissions reduction: Difficult to estimate no target set   |
| Sefton Metropolitan Borough Council_1           | Feasibility Study for Natural Gas and other alternative fuels re-fuelling facilities in the Liverpool City Region | Reducing emissions from HGVs on Port access routes              | Traffic planning and management:<br>Freight transport measure | Preparation    | Start date: 2015<br>Expected end date: 2015<br>Spatial scale: Whole agglomeration<br>Source affected: Transport<br>Indicator: Recommendations will be made by consultant in study report<br>Target emissions reduction: Not estimated but savings greater than 80% NOx & PM10 emissions savings by HGVs running on LNG compared to diesel |
| St Helens Metropolitan Borough Council_1        | Acoustic Barrier  | N/A   | Traffic planning and management:<br>Other measure             | Evaluation     | Start date: 2014<br>Expected end date: 2014<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Monitored results<br>Target emissions reduction: Medium   |

| Measure code                             | Description                  | Focus | Classification  | Status         | Other information   |
|--|------------------------------|-------|---|----------------|---|
| St Helens Metropolitan Borough Council_2 | Use of hard shoulder running | N/A   | Traffic planning and management:<br>Other measure                             | Evaluation     | Start date: 2014<br>Expected end date: 2014<br>Spatial scale: Whole agglomeration<br>Source affected: Transport<br>Indicator: Monitored results<br>Target emissions reduction: Medium |
| St Helens Metropolitan Borough Council_3 | Traffic Regulation Order     | N/A   | Traffic planning and management:<br>Other measure                             | Other          | Start date: 2014<br>Expected end date: 2014<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Monitored results<br>Target emissions reduction: N/A                  |
| St Helens Metropolitan Borough Council_4 | Vehicle Idling               | N/A   | Public information and Education:<br>Leaflets                                 | Preparation    | Start date: 2014<br>Expected end date: 2014<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Monitored results<br>Target emissions reduction: Low                  |
| St Helens Metropolitan Borough Council_5 | Optimise flow on key routes  | N/A   | Traffic planning and management:<br>Encouragement of shift of transport modes | Other          | Start date: 2012<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Monitored results<br>Target emissions reduction: low                  |
| St Helens Metropolitan Borough Council_6 | Travel awareness campaign    | N/A   | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2012<br>Expected end date: 2014<br>Spatial scale: Whole town or city<br>Source affected: Transport<br>Indicator: Uptake<br>Target emissions reduction: low                |
| St Helens Metropolitan Borough Council_7 | Freight quality partnership  | N/A   | Traffic planning and management:<br>Freight transport measure                 | Implementation | Start date: 2013<br>Expected end date: 2016<br>Spatial scale: National<br>Source affected: Transport<br>Indicator: Uptake and monitored results<br>Target emissions reduction: low    |
| St Helens Metropolitan Borough Council_8 | Green Council fleet          | N/A   | Other measure: Other measure  | Implementation | Start date: 2012<br>Expected end date: 2014<br>Spatial scale: Whole town or city<br>Source affected: Transport<br>Indicator: Annual fuel records<br>Target emissions reduction: low   |

| Measure code                              | Description                              | Focus  | Classification  | Status         | Other information   |
|---|--|--|---|----------------|---|
| St Helens Metropolitan Borough Council_9  | Green taxi fleet                         | N/A  | Other measure: Other measure                                      | Planning       | Start date: 2016<br>Expected end date: 2024<br>Spatial scale: Whole town or city<br>Source affected: Transport<br>Indicator: Calculated<br>Target emissions reduction: Low  |
| St Helens Metropolitan Borough Council_10 | Supplementary planning guidance          | N/A  | Other measure: Other measure                                      | Preparation    | Start date: 2016<br>Expected end date: 2016<br>Spatial scale: Whole town or city<br>Source affected: Other, please specify<br>Indicator: Monitored results<br>Target emissions reduction: medium  |
| St Helens Metropolitan Borough Council_11 | Raise awareness of AQ issues             | N/A  | Public information and Education: Other mechanisms                | Implementation | Start date: 2012<br>Expected end date: 2030<br>Spatial scale: Whole town or city<br>Source affected: Other, please specify<br>Indicator: Monitored results<br>Target emissions reduction: low   |
| Liverpool City Council_1.1                | Voluntary Bus Quality Partnership (VBQP) | Five corridors will come under the VBQP, but the first one will be Route 10. Agreed conditions will apply to bus operators, Merseytravel and LCC | Traffic planning and management: Improvement of public transport  | Implementation | Start date: 2013<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of Voluntary BQP<br>Target emissions reduction: Once the corridors are fully compliant, expected emission reduction has the potential to be significant. |
| Liverpool City Council_1.2                | Improve Euro Standard Buses              | The Euro Standard for new buses will be a condition within the VBQP  | Public procurement: New vehicles, including low emission vehicles | Implementation | Start date: 2013<br>Expected end date: 2013<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: % of compliant buses on the corridors<br>Target emissions reduction: Emission reduction will be within that estimated above                                     |

| Measure code               | Description                                 | Focus   | Classification                                    | Status         | Other information  |
|----------------------------|---|---|---|----------------|--|
| Liverpool City Council_1.3 | Signal enhancement                          | Signal enhancement at junctions along bus corridors to include enhanced phasing, selective vehicle detection and in some cases new signals  | Traffic planning and management:<br>Other measure | Implementation | Start date: 2009<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of junctions upgraded<br>Target emissions reduction: Emission reduction will be within that estimated above   |
| Liverpool City Council_1.4 | Enforcement of vehicle idling regulations   | Council officers will be asked to enforce the vehicle idling regulations focusing on buses and taxis.   | Traffic planning and management:<br>Other measure | Implementation | Start date: 2008<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of enforcement interventions<br>Target emissions reduction: Depends on scale of enforcement activity, but could reduce NOx concentrations by a few micrograms at areas where idling is a problem. |
| Liverpool City Council_2.1 | Trial of MOTE system                        | A trial will be carried out to assess using real time Mote sensor systems to feed air pollution data into Liverpool's traffic management systems. The systems will use this information to develop strategies to manage congestion and avoid peaks in concentrations. | Traffic planning and management:<br>Other measure | Implementation | Start date: 2006<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Congestion data from trial junctions<br>Target emissions reduction: The system is being trialled in Liverpool and indications are that it could reduce concentrations of NOx by several micrograms.      |
| Liverpool City Council_2.2 | Continual development of UTMC/SCOOT systems | Maximise efficiency of network utilisation and therefore manage congestion by upgrading systems on an ongoing basis.  | Traffic planning and management:<br>Other measure | Implementation | Start date: 2006<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Congestion data from key junctions<br>Target emissions reduction: Will vary by location and type of improvement.   |

| Measure code               | Description   | Focus  | Classification  | Status         | Other information  |
|----------------------------|---|--|---|----------------|--|
| Liverpool City Council_2.3 | Day to day operation of UTMC/SCOOT centre             | High levels of investment has led to significant work being done in the past few years and Liverpool's advanced systems are preventing congestion and therefore reducing polluting emissions now.  | Traffic planning and management:<br>Other measure                             | Implementation | Start date: 2006<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Congestion data from key junctions<br>Target emissions reduction: May not directly improve air quality outside of the interventions listed above, but is central to preventing air quality from getting appreciably worse in Liverpool in the context of growing traffic levels.                                   |
| Liverpool City Council_3.1 | Travel Plans in workplaces, schools, new developments | TravelWise offer advice to organisations in Liverpool on implementing Travel Plans.  | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2005<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Number of organisations/individuals actively engaged in travel planning.<br>Target emissions reduction: It is not possible to quantify for a city wide AQMA as data will first have to be generated for the city wide activity of current and future Travel Plans, not merely the number that have been developed. |
| Liverpool City Council_3.2 | Walking   | The Merseyside Local Transport Plan partners are working to make walking around Merseyside easier and more enjoyable. This includes improvements to public spaces and pavements as well as signposts and better provision for disabled people. | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2005<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Improvements to existing infrastructure and facilities<br>Target emissions reduction: It is not possible to quantify for a city wide AQMA as data will first have to be generated for city wide mode shifts to walking.  |



| Measure code               | Description                                      | Focus  | Classification  | Status         | Other information   |
|----------------------------|--|--|---|----------------|---|
| Liverpool City Council_3.3 | Cycling  | An agreement between Liverpool Primary Care Trust and Merseyside Transport Partnership sets out to generate a 10% increase in trips made by bike before the end of March 2011, compared to journeys in 2006. | Traffic planning and management:<br>Encouragement of shift of transport modes | Implementation | Start date: 2010<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Improvements to existing infrastructure and facilities<br>Target emissions reduction: The share of journeys taken by bicycle is still very small in Liverpool, and a 10% increase will not impact measurably on ambient air quality, though some estimate of emission savings could be undertaken when robust activity data is available. |
| Liverpool City Council_4.1 | Enhanced design of Live Air website              | To redesign the website including a strong educational element to the site to increase usage and public awareness  | Public information and Education:<br>Internet                                 | Preparation    | Start date: 2008<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Relaunch of site, number of hits on the site per month<br>Target emissions reduction: This is likely to have negligible impact in the short term but over the longer term it will encourage sustainable travel options  |
| Liverpool City Council_4.2 | Airtext Alert system                             | A three year trial, whereby registered members receive a text when pollution levels are high   | Public information and Education:<br>Other mechanisms                         | Implementation | Start date: 2008<br>Expected end date: 2010<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Launch of the service, number of registered members<br>Target emissions reduction: Aim is to provide a health warning to susceptible people when pollution is high. No impact on reducing emissions   |
| Liverpool City Council_5.1 | Enhance design of air quality monitoring network | There are currently several schemes aimed at reducing congestion the current monitoring network is not optimised to track the air quality effects of these schemes.  | Traffic planning and management:<br>Other measure                             | Other          | Start date: 2011<br>Expected end date: 2030<br>Spatial scale: Local<br>Source affected: Transport<br>Indicator: Monitoring data from key corridors and junctions<br>Target emissions reduction: No reduction will be invoked directly but a better understanding of policy effects on air quality would be gained.  |

| Measure code | Description | Focus | Classification | Status | Other information |
|--------------|-------------|-------|----------------|--------|-------------------|
|              |             |       |                |        |                   |