



Department
for Environment
Food & Rural Affairs



Department
for Transport

Air Quality Plan for tackling roadside nitrogen dioxide concentrations in Birkenhead Urban Area (UK0020)

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Any enquiries regarding this publication should be sent to us at:

air.quality@defra.gsi.gov.uk

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1 Introduction

1.1 This document

This document is the Birkenhead Urban Area agglomeration zone (UK0020) updated air quality plan for tackling roadside nitrogen dioxide (NO₂) concentrations. This is an update to the air quality plan published in December 2015 (<https://www.gov.uk/government/collections/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2015>).

This plan presents the following information:

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

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

1.2 Context

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

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

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

1.3 Zone status

The assessment undertaken for the Birkenhead Urban Area agglomeration zone indicates that the annual limit value was exceeded in 2015 but is likely to be achieved by 2019 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 NO₂ levels in this agglomeration zone for the 2015 reference year of this air quality plan. This includes a declaration of exceedance situations within the agglomeration zone and presentation of a detailed source apportionment for each exceedance situation.

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

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

2 General Information About the Zone

2.1 Administrative information

Zone name: Birkenhead Urban Area

Zone code: UK0020

Type of zone: agglomeration zone

Reference year: 2015

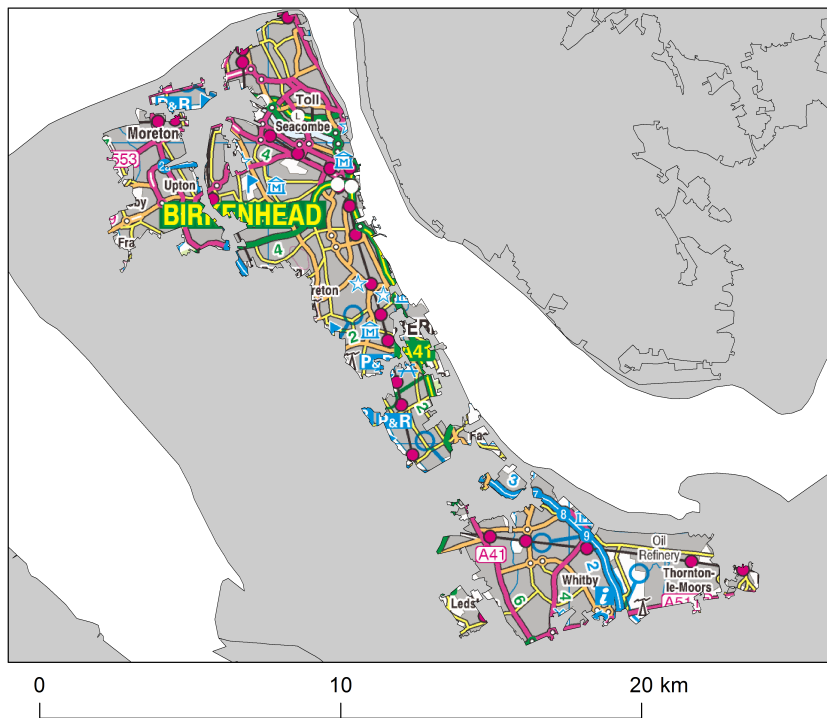
Extent of zone: Figure 1 shows the area covered by the Birkenhead Urban Area agglomeration zone.

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. Cheshire West and Chester Council
2. Wirral 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 Birkenhead Urban Area agglomeration zone (UK0020).



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Figure 2: Map showing Local Authorities within the Birkenhead Urban Area agglomeration zone (UK0020).



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2.2 Assessment details

Measurements

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

1. Wirral Tranmere GB0730A (85%)

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

Modelling

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

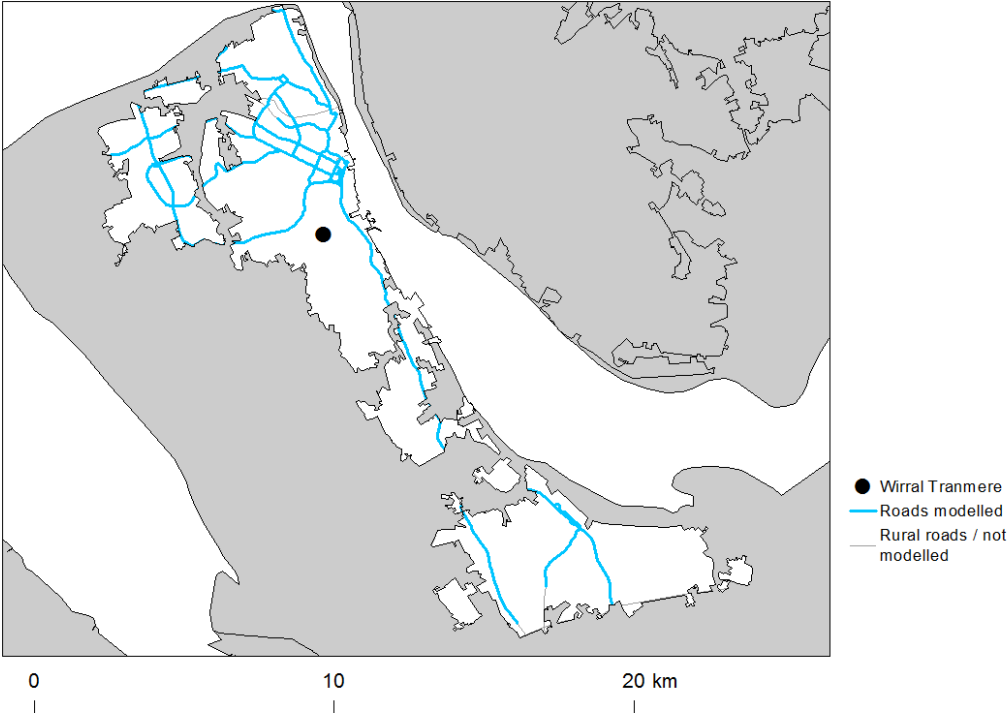
- Total background area within zone (approx): 97 km²
- Total population within zone (approx): 284,975 people

Zone maps

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

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

Figure 3: Map showing the location of the NO₂ monitoring stations with valid data in 2015 and roads where concentrations have been modelled within the Birkenhead Urban Area (UK0020) agglomeration zone.



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2.3 Air quality reporting

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

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

3 Overall Picture for 2015 Reference Year

3.1 Introduction

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

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

Within the Birkenhead Urban Area agglomeration zone the annual limit value was exceeded in 2015. Hence, one exceedance situation for this zone has been defined, NO₂_UK0020_Annual_1, which covers exceedances of the annual limit value. This exceedance situation is described below.

3.2 Reference year: NO₂_UK0020_Annual_1

The NO₂_UK0020_Annual_1 exceedance situation covers all exceedances of the annual mean limit value in the Birkenhead Urban Area agglomeration zone in 2015.

Compliance with the annual limit value in this exceedance situation has been assessed using a combination of air quality measurements and modelling. Table 1 presents measured annual concentrations at national network stations in this exceedance situation since the 1st Daughter Directive (1999/30/EC) came into force in 2001. This shows that there were no measured exceedances of the annual limit value in this zone in 2015. Table 2 summarises modelled annual mean NO₂ concentrations in this exceedance situation for the same time period. This table shows that, in 2015, 6.4 km of road length was modelled to exceed the annual limit value. There were no modelled background exceedances of the annual limit value. The maximum measured concentration in the zone varies due to changes in emissions and varying meteorology in different years. However, the models are also updated each year to take into account the most up-to-date science, so the modelled results for different years may not be directly comparable. Maps showing the modelled annual mean NO₂ concentrations for 2015 at background and at roadside locations are presented in Figures 4 and 5 respectively. All modelled exceedances of the annual limit value are coloured orange or red in the maps.

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

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

Figure B.1 in Annex B presents the annual mean NO_x source apportionment for each section of road within the NO₂_UK0020_Annual_1 exceedance situation (i.e. the source apportionment for all exceeding roads only) in 2015.

Table 1: Measured annual mean NO₂ concentrations at national network stations in NO₂_UK0020_Annual_1 for 2001 onwards, μgm^{-3} (a). Data capture shown in brackets.

Site name (EOI code)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Wirral Tranmere (GB0730A)	22 (98)	22 (94)	27 (96)	19 (94)	17 (64)	19 (93)	19 (97)	19 (98)	19 (94)	27 (34)				20 (55)	20 (85)

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

Table 2: Annual mean NO₂ model results in NO₂_UK0020_Annual_1 for 2001 onwards.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Road length exceeding (km)	12.7	0.6	25.2	6.0	5.1	8.5	16.1	11.4	11.0	13.7	6.0	7.5	5.3	2.9	6.4
Background exceeding (km ²)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum modelled concentration (μgm^{-3}) (a)	47.5	41.4	48.9	45.5	46.9	46.1	49.0	44.1	60.9	68.7	48	47	47	45	46

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

Table 3: Modelled annual mean NO_x source apportionment at the location with the highest NO₂ concentration in 2015 in NO2_UK0020_Annual_1 (μgm⁻³) traffic count point 36063 on the M53; OS grid (m): 340000, 377416) .

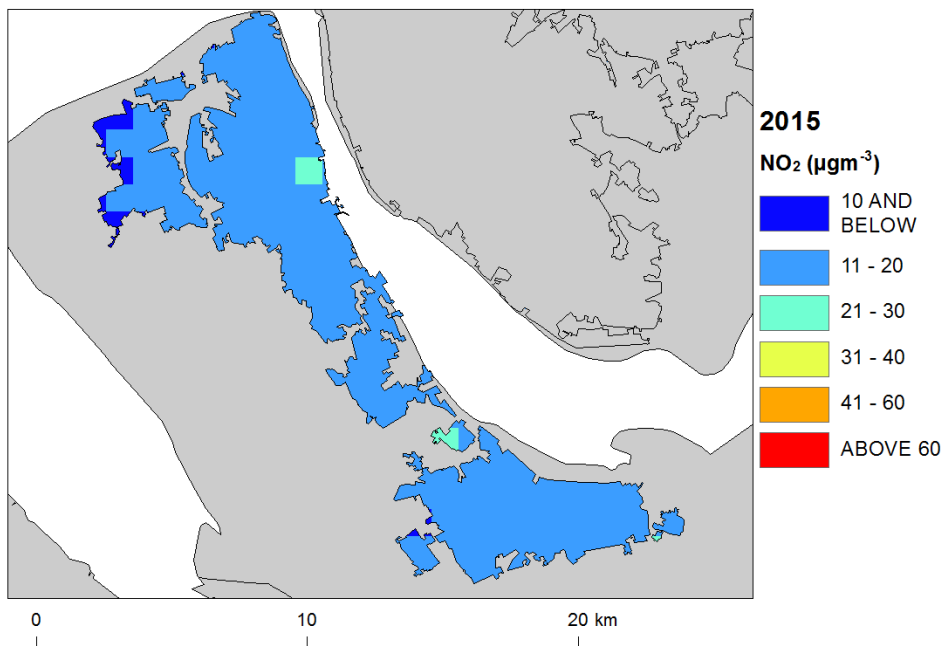
Spatial scale	Component	Concentration at highest road link (a)
Regional background sources NO _x (i.e. contributions from distant sources of > 30 km from the receptor).	Total	4.4
	From within the UK	2.3
	From transboundary sources (includes shipping and other EU member states)	2.1
Urban background sources NO _x (i.e. sources located within 0.3 - 30 km from the receptor).	Total	21.4
	From road traffic sources	9.6
	From industry (including heat and power generation)	2.9
	From agriculture	NA
	From commercial/residential sources	2.7
	From shipping	3.3
	From off road mobile machinery	1.7
	From natural sources	NA
	From transboundary sources	NA
From other urban background sources	1.2	
Local sources NO _x (i.e. contributions from sources < 0.3 km from the receptor).	Total	81.5
	From petrol cars	4.1
	From diesel cars	36.0
	From HGV rigid (b)	7.0
	From HGV articulated (b)	8.7
	From buses	1.1
	From petrol LGVs (c)	0.1
	From diesel LGVs (c)	24.4
From motorcycles	0.1	
From London taxis	0.0	
Total NO _x (i.e. regional background + urban background + local components)		107.3
Total NO ₂ (i.e. regional background + urban background + local components)		46

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

(b) HGV = heavy goods vehicle

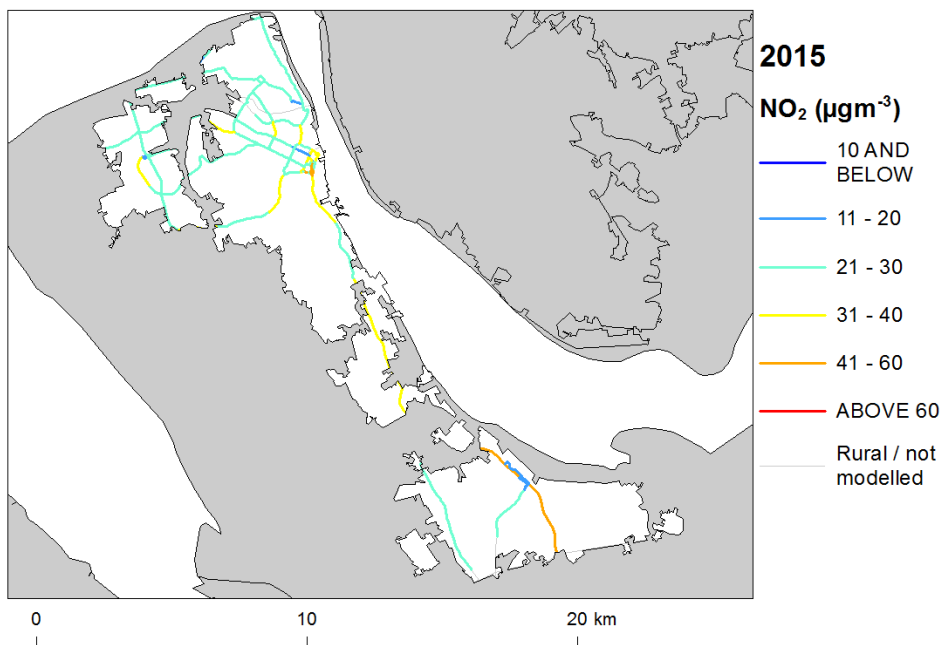
(c) LGV = light goods vehicle

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



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



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4 Measures

4.1 Introduction

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

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

4.2 Source apportionment

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

Local road traffic was the dominant source in this exceedance location in the reference year. The largest contribution was from diesel cars at the location of maximum exceedance with a contribution of 36 $\mu\text{g}\text{m}^{-3}$ of NO_x out of a total of 107.3 $\mu\text{g}\text{m}^{-3}$ of NO_x. Diesel cars and diesel LGVs were important sources on the motorway roads with the highest concentrations in this exceedance situation. Diesel cars, buses and diesel LGVs were important sources on the primary roads with the highest concentrations.

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

4.3 Measures

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

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

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

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

There are several initiatives that are taking place in the zone that will improve air quality levels. A low emission strategy in the zone has secured funding which will improve emissions and reduce concentrations of pollutants.

There is an active level of encouragement in the zone from shifting away from the use of private cars to other modes of transport e.g. cycling and walking as well as car sharing. Buy in from businesses and schools will help increase uptake. The delivery of these schemes is low cost but has a high impact. All help to improve air quality and the environment.

There is also a move to promote the use of new technology and alternative fuels to reduce carbon emissions from transport. There is a programme on congestion management and a feasibility study into park and ride. This will build on a renewal of another park and ride scheme which is underway. Funding from the clean bus technology fund has allowed eight buses to be retrofitted and funding from the Office for Low Emission Vehicles is supporting the installation of electric car charging points.

4.4 Measures timescales

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

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

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

5 Baseline Model Projections

5.1 Overview of model projections

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

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

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

5.2 Baseline projections: NO₂_UK0020_Annual_1

Table 4 presents summary results for the baseline model projections for each year from 2017 to 2030 for the NO₂_UK0020_Annual_1 exceedance situation. This shows that the maximum modelled annual mean NO₂ concentration predicted for 2019 in this exceedance situation is 40 $\mu\text{g}\text{m}^{-3}$. Hence, the model results suggest that compliance with the NO₂ annual limit value is likely to be achieved by 2019 under baseline conditions.

Figure 6 and 7 presents maps of projected annual mean NO₂ concentrations at background and roadside locations respectively in 2019, the year at which compliance is achieved. For reference Figures 8 and 9 show maps of projected annual mean NO₂ concentrations in 2020, 2025 and 2030 for background and roadside locations respectively.

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

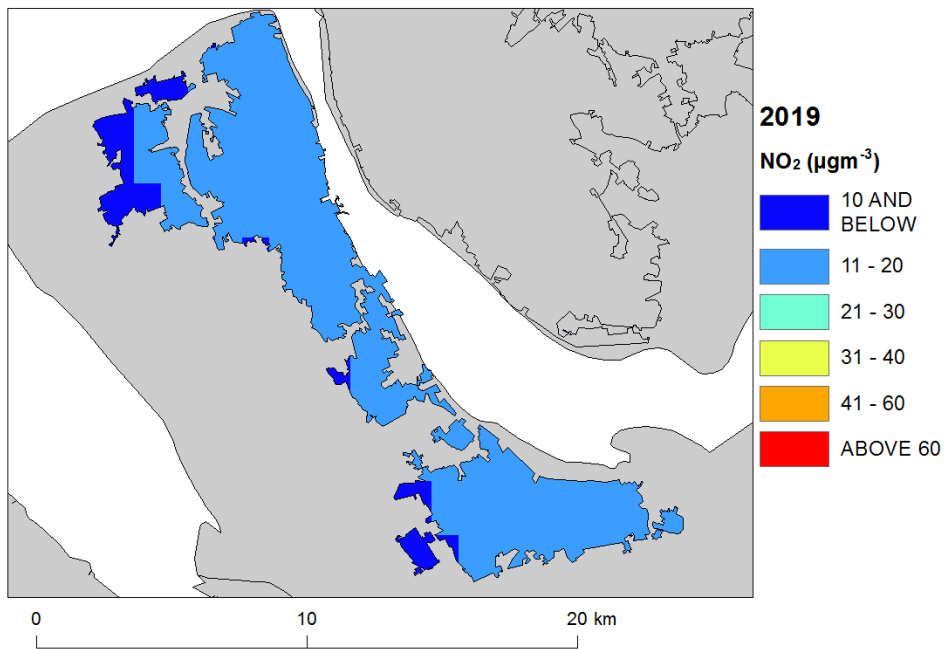
Table 4: Annual mean NO₂ model results in NO₂_UK0020_Annual_1.

	2015	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Road length exceeding (km)	6.4	6.4	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Background exceeding (km ²)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum modelled concentration NO ₂ (μgm ⁻³) (a)	46	44	42	40	38	36	34	32	31	29	28	27	26	25	24
Corresponding modelled concentration NO _x (μgm ⁻³) (b)	107	100	94	89	83	77	72	67	63	60	56	53	51	49	47

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

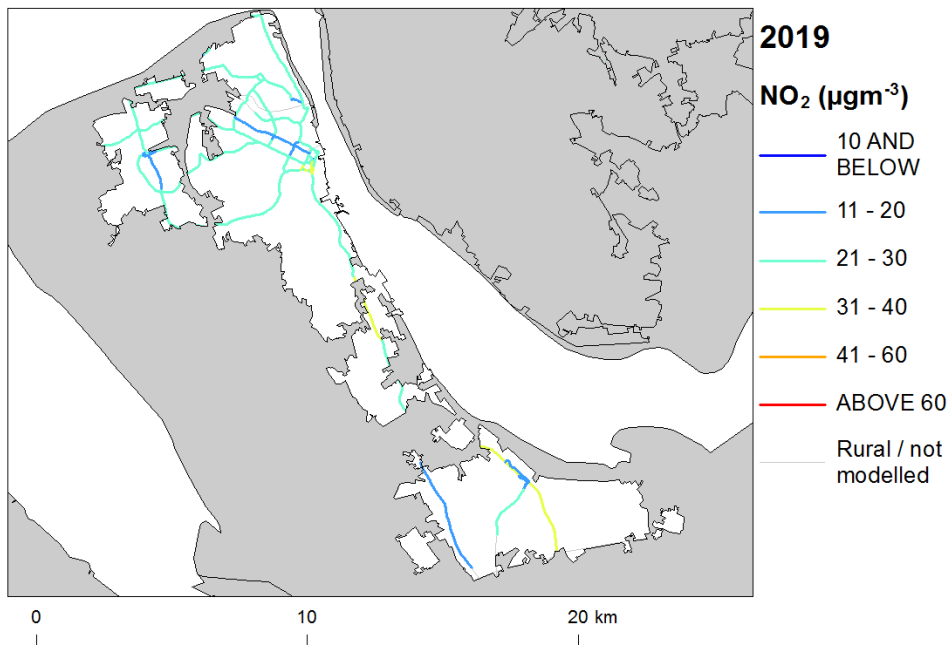
(b) NO_x is recorded here for comparison with the NO_x source apportionment graphs for 2015 presented in Annex B of this plan. Limit values for EU directive purposes are based on NO₂.

Figure 6: Background baseline projections of annual mean NO₂ concentrations in 2019, the year at which compliance is achieved under baseline conditions. Modelled exceedances of the annual limit value are shown in orange and red.



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Figure 7: Roadside baseline projections of annual mean NO₂ concentrations in 2019, the year at which compliance is achieved under baseline conditions. Modelled exceedances of the annual limit value are shown in orange and red.



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

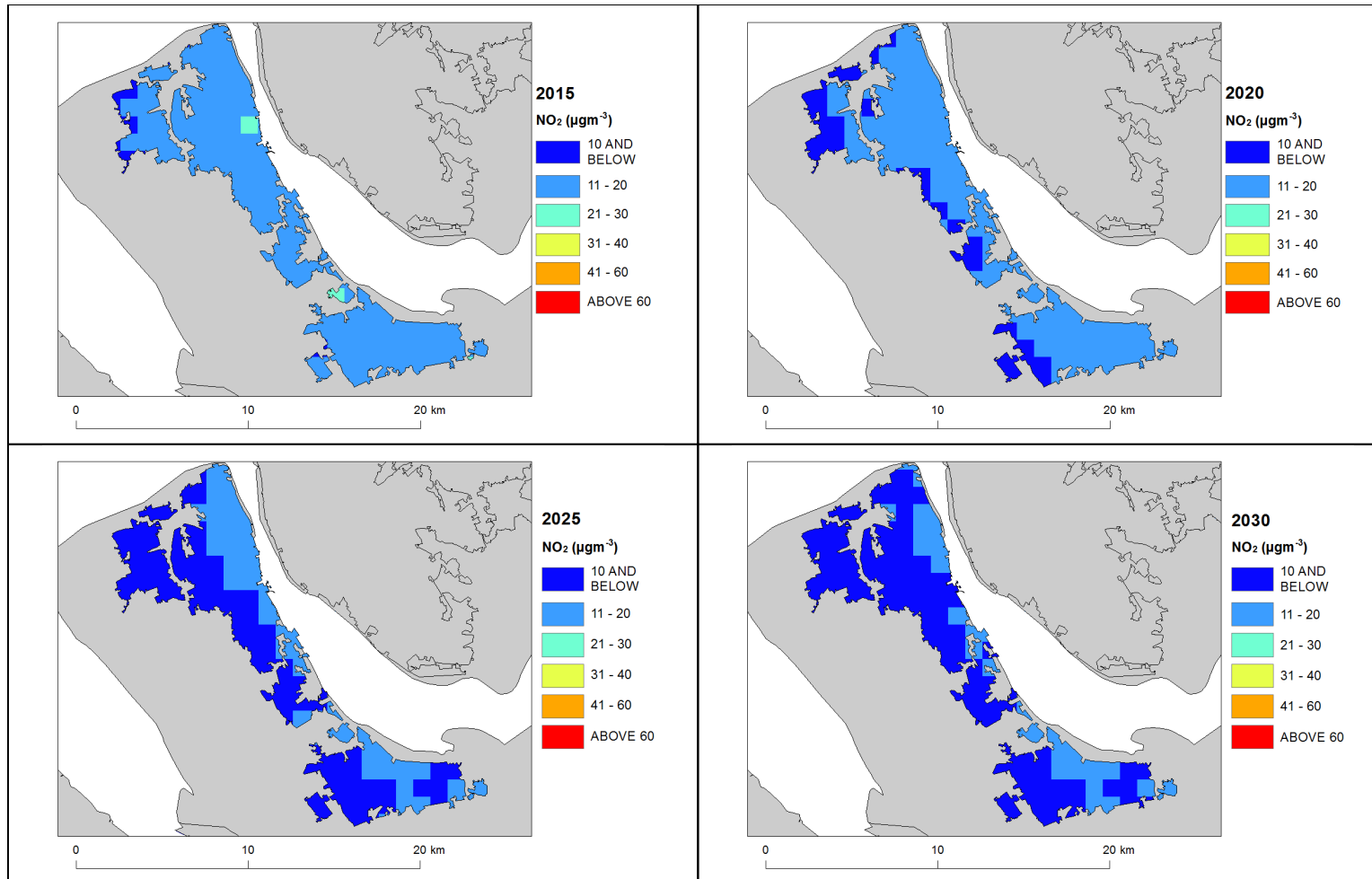
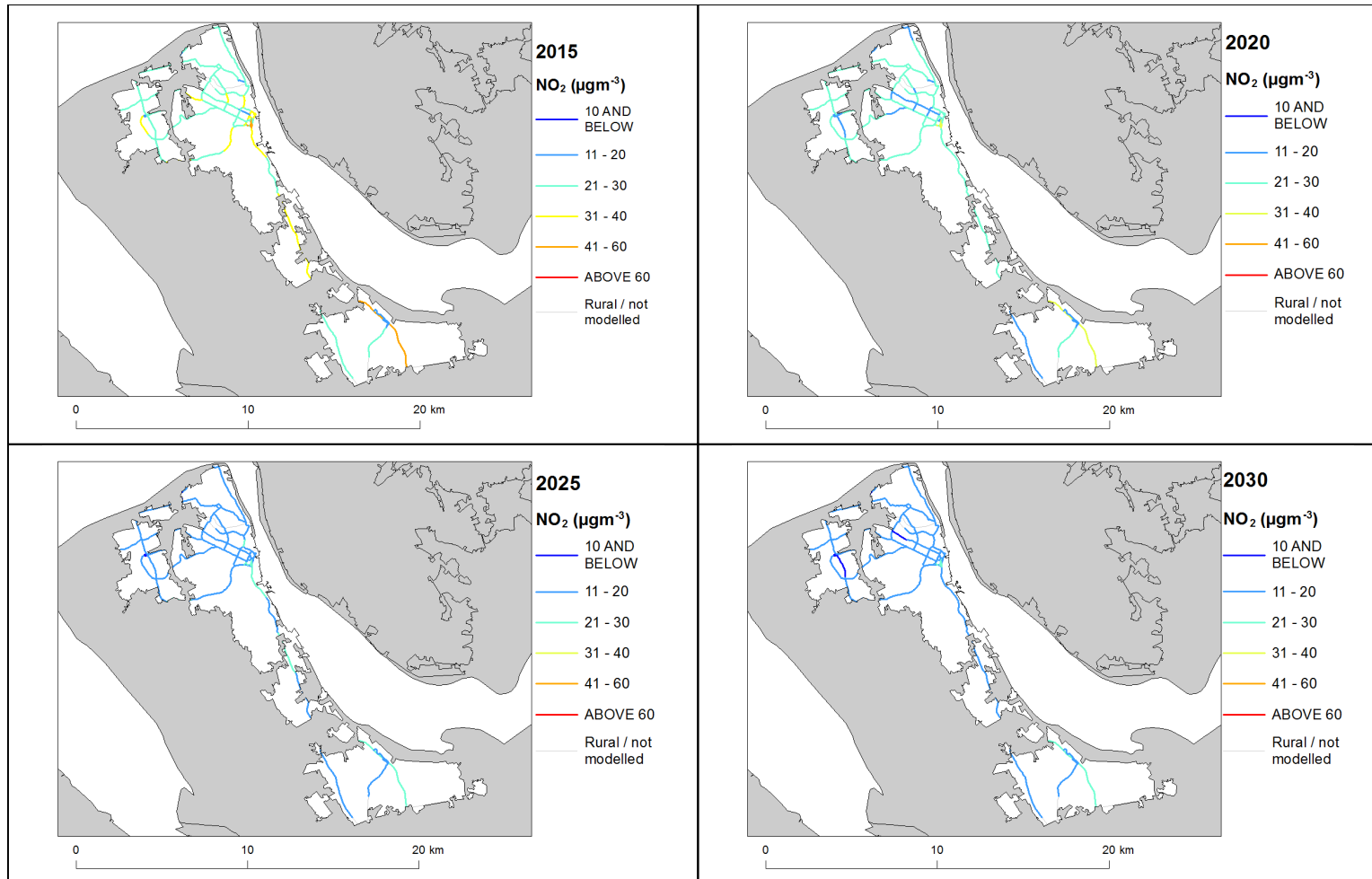


Figure 9: Roadside baseline projections of annual mean NO₂ concentrations in 2020, 2025 and 2030. 2015 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.



Annexes

A References

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

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

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

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

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

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

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

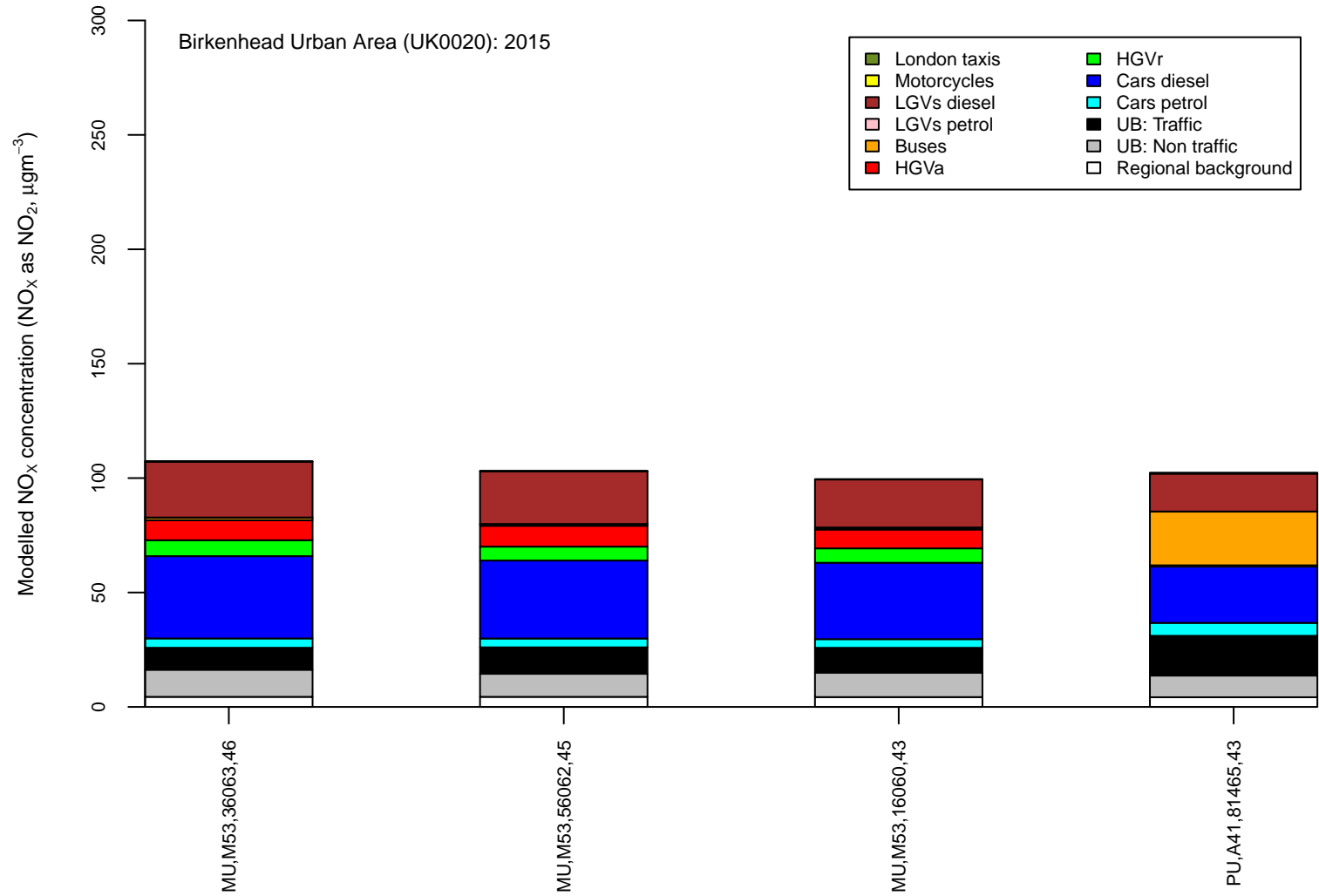
IPR 2013. Guidance on the Commission Implementing Decision laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air (Decision 2011/850/EU). http://ec.europa.eu/environment/air/quality/legislation/pdf/IPR_guidance1.pdf

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

B Source apportionment graphs

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



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

C Tables of measures

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Table C.1 Relevant Local Authority measures within Birkenhead Urban Area (UK0020)

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_52	Workplace Grants	Organisations wishing to improve green staff travel	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2012 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_53	272 (LSTF funded Saturday only) Bus Service	Ellesmere Port/Neston	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2012 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_54	Additional Huntington Services to Rail Station	Connectivity to London Commute rail services	Traffic planning and management: Improvement of public transport	Evaluation	Start date: 2014 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_55	LSTF Smarter Choices Team	Chester/Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_56	Itravelsmart mapping	Chester/Ellesmere Port	Public information and Education: Internet	Implementation	Start date: 2012 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_57	Workplace Personalised Travel Planning	Chester/Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_58	Community Personalised Travel Planning	Chester/Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_59	Greenway - Ellesmere Port	Multi-user pathway network (50km+) and green route around the town	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Implementation	Start date: 2012 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_1	Optimisation of traffic signals at Westminster Bridge	Smoother flow of vehicles on main routes in town centre	Traffic planning and management: Other measure	Preparation	Start date: 2014 Expected end date: 2014 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_2	Parking enforcement in Ellesmere Port town centre	On street parking - obstructions	Traffic planning and management: Other measure	Implementation	Start date: 2008 Expected end date: 2009 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_3	Roadside emissions testing	Light duty vehicle emissions in AQMA	Other measure: Other measure	Implementation	Start date: 2006 Expected end date: 2008 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_4	Emissions tests on taxis and private hire vehicles	Additional MOT-type tests for emissions	Other measure: Other measure	Implementation	Start date: 2006 Expected end date: 2008 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_5	Visual assessment of taxi emissions	Taxi rank idling vehicles	Traffic planning and management: Other measure	Implementation	Start date: 2007 Expected end date: 2008 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_6	Age policy (entry and exit) for taxis and private hire vehicles	Policy - Rolling programme of vehicle replacement and improvement	Permit systems and economic instruments: Introduction/increase of environment taxes	Implementation	Start date: 2013 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_7	Supplementary planning document	Impact of new developments on air quality	Other measure: Other measure	Preparation	Start date: 2015 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_8	Electronic information signs	Display of real-time air quality index readings	Public information and Education: Other mechanisms	Implementation	Start date: 2007 Expected end date: 2007 Spatial scale: Local Source affected: Other, please specify Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_9	Publish real-time air quality data on council website	Provision of information for public	Public information and Education: Internet	Implementation	Start date: 2007 Expected end date: 2010 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_10	Publish public transport info on website	Provision of information for public	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2007 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_11	Promote initiatives such as Walk to Work Day on website and electronic signs	Provision of information for public	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2007 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_12	Whitby Park education trail	Raising awareness of air quality issues in line with key stage 2 objectives	Public information and Education: Other mechanisms	Implementation	Start date: 2007 Expected end date: 2008 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_13	Promote cycling strategy	Encourage alternative modes of transport	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2007 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_14	Install cycle stands in Ellesmere Port	Encourage alternative modes of transport	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2007 Expected end date: 2008 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_15	Promote walking strategy	Encourage alternative modes of transport	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2008 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_16	Travel Plans - private sector	Encourage alternative modes of transport	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2008 Expected end date: 2011 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_17	Journeys to schools	Encourage alternative modes of transport	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2008 Expected end date: 2011 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_18	Improved bus stop facilities in Ellesmere Port	Accessibility of public transport	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2008 Expected end date: 2009 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_19	Urban Traffic Management and Control	Boughton gyratory - congestion management	Traffic planning and management: Other measure	Preparation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_20	Park & Ride hub - evaluation	Feasibility study for new (5th) site at Hoole	Traffic planning and management: Improvement of public transport	Evaluation	Start date: 2014 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_21	Park & Ride contract renewal	New contract for tendered services to include improved emissions standards (min Euro VI or hybrid)	Traffic planning and management: Improvement of public transport	Planning	Start date: 2016 Expected end date: 2021 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_22	City Car Club	Chester-based facilities available to public, businesses and council staff	Other measure: Other measure	Implementation	Start date: 2013 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_23	Cycle Demonstration Town	Chester's CDT status aims to increase cycling rates	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2008 Expected end date: 2011 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_24	Clean Bus Technology Fund	CBTF funding for 8 bus engine retrofits. Services running through Boughton AQMA	Retrofitting: Retrofitting emission control equipment to vehicles	Implementation	Start date: 2013 Expected end date: 2014 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_25	Clean Vehicle Technology Fund	CVTF funding for 8 bus engine retrofits. Services running through George & Dragon gyratory	Retrofitting: Retrofitting emission control equipment to vehicles	Preparation	Start date: 2015 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_26	Eco Driver training	Driver training delivered to council staff	Other measure: Other measure	Implementation	Start date: 2010 Expected end date: 2010 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_27	Deincentivising public sector business travel	Adoption of inland revenue taxable mileage rates	Other measure: Other measure	Implementation	Start date: 2012 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_28	Low Emissions Strategy	Development of a borough-wide LES	Other measure: Other measure	Planning	Start date: 2015 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_29	Vehicle idling	Buses and coaches using Chester bus station	Traffic planning and management: Other measure	Implementation	Start date: 2013 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_30	Workplace Challenge	Encouraging cycling / walking instead of driving (incentivised). Council, businesses and individual focus	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2013 Expected end date: 2013 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_31	Secure cycle storage	Provision of secure lockers at several locations around Chester	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2010 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_32	ITravelSmart campaign	Promotion of sustainable travel alternatives as part of LSTF project	Public information and Education: Internet	Implementation	Start date: 2012 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_33	Work Smart - Flexible and Mobile working strategy	Encouragement of home / mobile / flexible / office working for council staff	Other measure: Other measure	Implementation	Start date: 2012 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_34	Car Sharing	Promotion of sustainable travel alternatives as part of LSTF project	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2013 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_35	Cycle Hire Scheme	Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2013 Expected end date: 2013 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_36	Community Personalised Travel Planning	Chester/Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_37	ITravelSmart app	N/A	Public information and Education: Internet	Implementation	Start date: 2014 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_38	Railway station travel plans	Chester / Ellesmere Port / Bache	Traffic planning and management: Encouragement of shift of transport modes	Preparation	Start date: 2015 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_39	Park & Ride contract additional stops	New bus stops to be introduced into cross-city park and ride services at key strategic employment and shopping sites	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: 2016 Expected end date: 2021 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_40	Railway station parking expansion	Hooton (rural) station car park expanded to encourage rail commute (Chester - Liverpool line)	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2014 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_41	Bikeability campaign	All Primary Schools	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2009 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_42	Let's Bike	School years 5 & 6	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2000 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_43	Let's Walk	School years 3 & 4	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2002 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_44	Adults cycling	Adults 17 & above	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_45	Car share database	Deeside enterprise zone - Cheshire West residents focus	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_46	Connect2 Cycle Infrastructure	Chester City	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2009 Expected end date: 2011 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_47	LSTF Cycle Infrastructure	Chester / Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2012 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Cheshire West and Chester Council_48	SMILES (European Funded Project)	All Borough	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2010 Expected end date: 2012 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_49	Bike-It	Chester	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2009 Expected end date: 2013 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_50	Deeside Shuttle Bus	Ellesmere Port	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2013 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Cheshire West and Chester Council_51	OLEV electric car charging points	Ellesmere Port	Traffic planning and management: Improvement of public transport	Planning	Start date: 2015 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A