



Department
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Draft Air Quality Plan for the achievement of EU air quality limit value for nitrogen dioxide (NO₂) in Cardiff Urban Area (UK0026)

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Llywodraeth Cymru
Welsh Government



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1 Introduction

1.1 This document

This document is the Cardiff Urban Area agglomeration zone (UK0026) updated air quality plan for the achievement of the EU air quality limit values for nitrogen dioxide (NO₂). 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 Cardiff Urban Area agglomeration zone
- Details of the NO₂ exceedance situation within the Cardiff 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 Cardiff 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 NO₂ limit values is achieved in the shortest possible time.

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 μgm^{-3}
- The hourly limit value: no more than 18 exceedances of 200 μgm^{-3} in a calendar year.

The Air Quality Directive stipulates that compliance with the NO₂ limit values will be achieved by 01/01/2010. However, where the limit values cannot be achieved by then, the Directive also allowed Member States to postpone this attainment date until 01/01/2015 at the latest provided air quality plans were established demonstrating how the limit values would be met by this extended deadline. Postponement of compliance until 01/01/2015 was granted by the European Commission for Cardiff Urban Area agglomeration zone.

1.3 Zone status

The assessment undertaken for the Cardiff 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 NO₂ 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: Cardiff Urban Area

Zone code: UK0026

Type of zone: agglomeration zone

Reference year: 2013

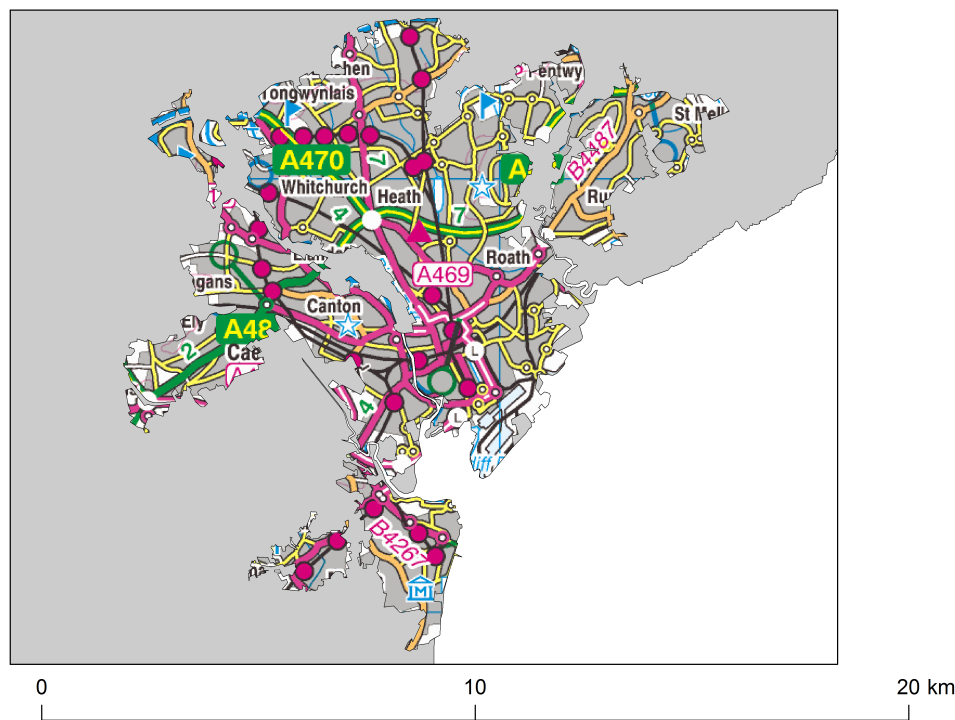
Extent of zone: Figure 1 shows the area covered by the Cardiff Urban Area agglomeration zone.

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. Cardiff County Council
2. Vale of Glamorgan 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 Cardiff Urban Area agglomeration zone (UK0026).



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Figure 2: Map showing Local Authorities within the Cardiff Urban Area agglomeration zone (UK0026).



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2.2 Assessment details

Measurements

NO₂ measurements in this zone were available in 2013 from the following national network monitoring stations (NO₂ data capture for each station in 2013 shown in brackets):

1. Cardiff Centre GB0580A (96%)

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

Modelling

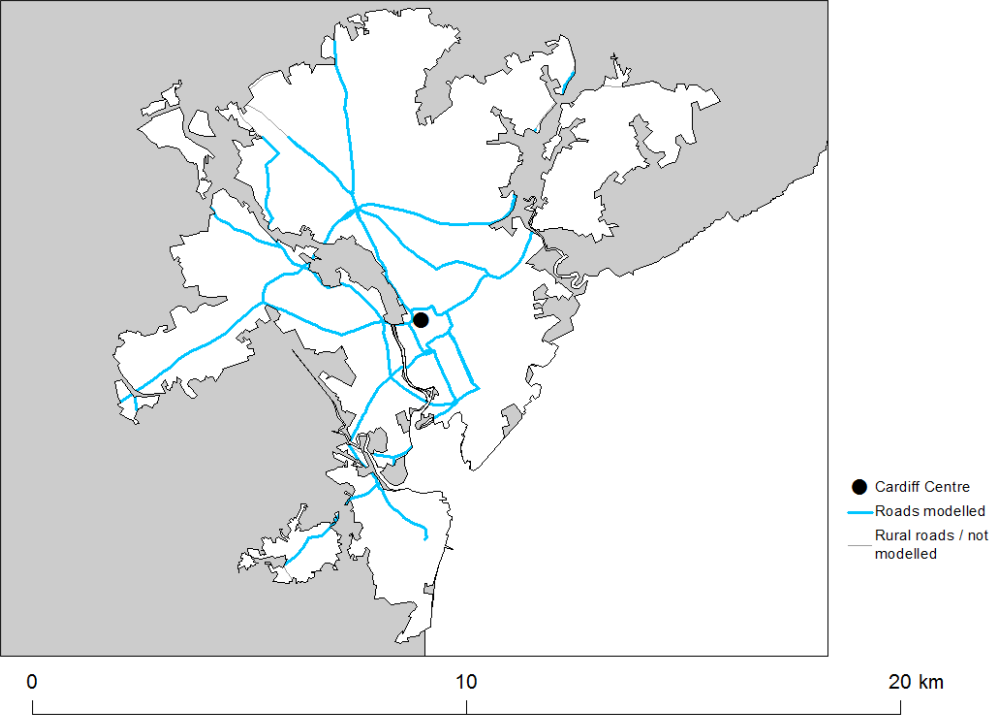
Modelling for the 2013 reference year has been carried out for the whole of the UK. This modelling covers the following extent within this zone:

- Total background area within zone (approx): 86 km²
- Total population within zone (approx): 327,129 people
- Total road length where an assessment of NO₂ concentrations have been made: 62 km in 2013 (and similar lengths in previous years)

Zone maps

Figure 3 presents the location of the NO₂ monitoring stations within this zone for 2013 and the roads for which NO₂ concentrations have been modelled. NO₂ concentrations at background locations have been modelled across the entire zone at a 1 x 1 km² resolution.

Figure 3: Map showing the location of the NO₂ monitoring stations with valid data in 2013 and roads where concentrations have been modelled within the Cardiff Urban Area (UK0026) 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 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 Cardiff Urban Area agglomeration zone the annual limit value was exceeded in 2013. Hence, one exceedance situation for this zone has been defined, NO₂_UK0026_Annual_1, which covers exceedances of the annual limit value. This exceedance situation is described below.

Where locations have a time extension in place, a margin of tolerance has been defined by the Air Quality Directive (2008/50/EC) which applies to both NO₂ limit values up until the time extension expires. Data comparing assessed concentrations at locations within this agglomeration zone with the margin of tolerance are presented in e-reporting for 2013 (<http://cdr.eionet.europa.eu/gb/eu/annualair>).

3.2 Reference year: NO₂_UK0026_Annual_1

The NO₂_UK0026_Annual_1 exceedance situation covers all exceedances of the annual mean limit value in the Cardiff 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 NO₂ concentrations in this exceedance situation for the same time period. This table shows that, in 2013, 19.8 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 NO₂ 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_x source apportionment for all modelled locations. Table 3 presents summary source apportionment information in this exceedance situation.

Table 3 summarises the modelled NO_x source apportionment for the section of road with the highest modelled NO₂ 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 NO₂ concentrations for the reasons discussed in the UK Technical Report¹. Therefore no NO₂ source apportionment is provided.

Figure B.1 in Annex B presents the annual mean NO_x source apportionment for each section of road within the NO₂_UK0026_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.

¹Technical report to be finalised for the final plan.

Table 1: Measured annual mean NO₂ concentrations at national network stations in NO2_UK0026_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
Cardiff Centre (GB0580A)	33 (93)	33 (94)	35 (87)	30 (97)	35 (56)	31 (97)	31 (98)	29 (99)	31 (98)	33 (95)	27 (95)	27 (91)	26 (96)

(a) Annual Mean Limit Value = 40 μgm^{-3}

Table 2: Annual mean NO₂ model results in NO2_UK0026_Annual_1 for 2001 onwards.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Road length exceeding (km)	19.5	3.1	37.6	17.1	16.1	16.0	15.6	18.4	18.8	25.9	24.3	23.2	19.8
Background exceeding (km ²)	1	0	0	0	0	0	0	0	0	0	1	0	0
Maximum modelled concentration (μgm^{-3}) (a)	48.9	46.1	62.3	61.0	58.6	58.5	62.6	58.7	57.5	60.9	55	69	54

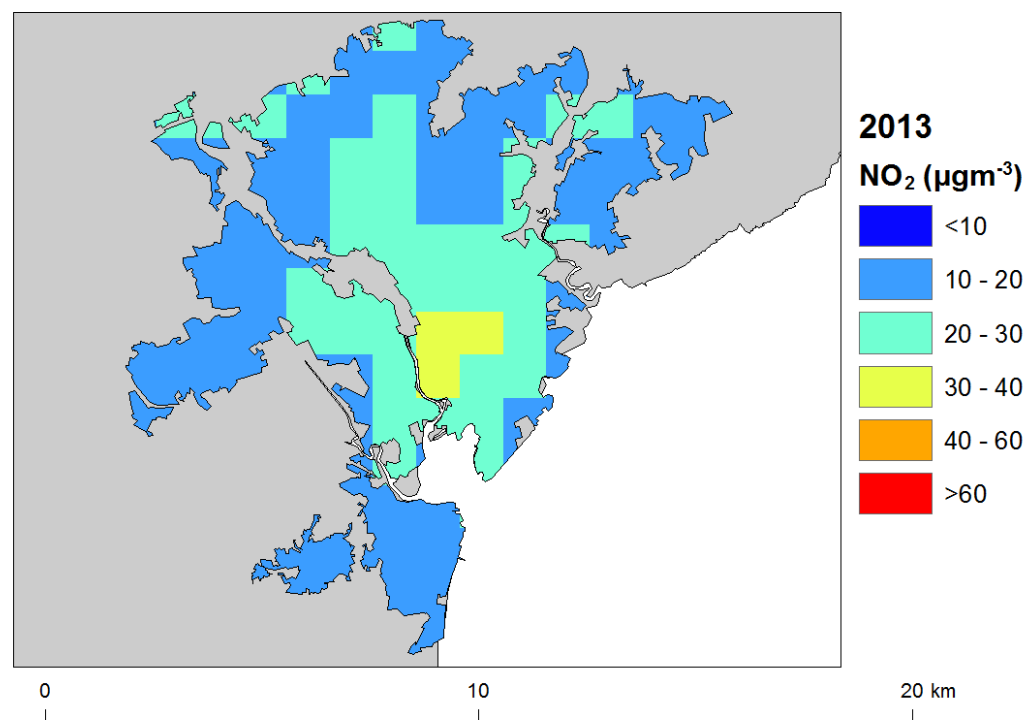
(a) Annual Mean Limit Value = 40 μgm^{-3}

Table 3: Modelled annual mean NOx source apportionment at the traffic count point with the highest modelled concentration in 2013 in NO2_UK0026_Annual_1 (μgm^{-3}) (traffic count point 20527 on the A48; OS grid (m): 320000, 178765).

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	6.5
	From within the UK	3.3
	From transboundary sources (includes shipping and other EU member states)	3.2
Urban background sources NOx (i.e. sources located within 0.3 - 30 km from the receptor).	Total	29.1
	From road traffic sources	17.5
	From industry (including heat and power generation)	4.3
	From agriculture	NA
	From commercial/residential sources	3.1
	From shipping	0.6
	From off road mobile machinery	1.6
	From natural sources	NA
	From transboundary sources	NA
	From other urban background sources	2.1
Local sources NOx (i.e. contributions from sources < 0.3 km from the receptor).	Total	98.6
	From petrol cars	9.6
	From diesel cars	44.4
	From HGV rigid	12.5
	From HGV articulated	5.0
	From buses	10.0
	From petrol LGVs	0.3
	From diesel LGVs	16.7
	From motorcycles	0.1
	From London taxis	0.0
Total NOx (i.e. regional background + urban background + local components)		134.2
Total NO ₂ (i.e. regional background + urban background + local components)		54

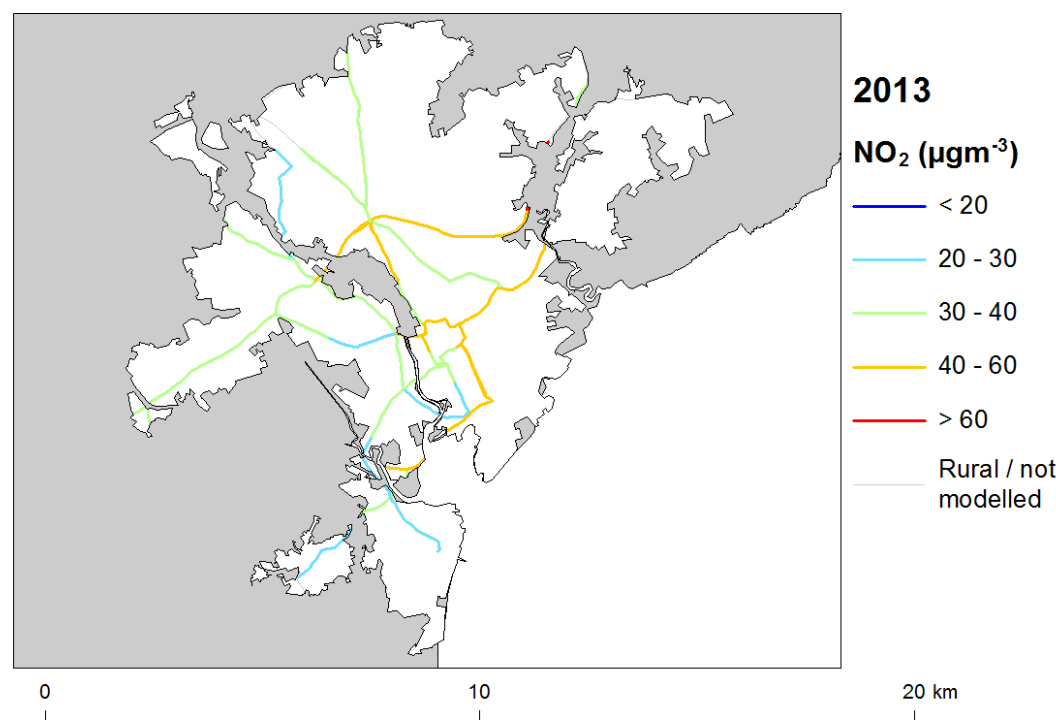
(a) Components are listed with NOx concentration of NA when there is no source from this sector.

Figure 4: Map of modelled background annual mean NO₂ 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 NO₂ 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 NO₂ limit values within Cardiff 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 cars at the location of maximum exceedance with a contribution of 54 μgm^{-3} of NO_x out of a total of 134.2 μgm^{-3} of NO_x. Cars, LGVs and on some roads rigid and articulated HGVs and buses were important sources on the primary roads with the highest concentrations. For all road links concentrations of NO_x from diesel cars were approximately four times greater than NO_x emissions from petrol cars. NO_x concentrations from petrol LGVs are a small component of total NO_x concentrations and less than 2% of total NO_x 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 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. Additional local measures which will deliver air quality improvements in Cardiff Urban Area agglomeration zone have been provided by the Welsh Government and these are listed in Table C.2.

The Local Transport Plan recognises the need to improve air quality. Its programme prioritises: development of active travel networks to increase walking and cycling for local journeys: the provision of cycling infrastructure; the bus network; reduced speed limits; reducing congestion; improving transport efficiency and reliability; and bus based park and ride.

There have been a significant number of initiatives in the Area. There are widening choices for citizens that will help reduce traffic congestion e.g. pedestrian crossing schemes and strategic recreational routes for cycling.

Also, bus infrastructure improvements have been taking place in addition to park and ride, safer walking routes to schools and in the communities. School travel plans have also been implemented which encourages modal shift from cars to other forms of transport that help to improve air quality.

A cycling strategy is being implemented to increase the levels of uptake in place of using cars. An initiative on green fleet vehicles and alternative fuel vehicles is underway that will encourage the uptake of low emission vehicles.

The National Transport Finance Plan refers to investment in the Cardiff Capital Metro project which, alongside existing initiatives which have already been applied, is being designed to enhance sustainable travel choices for transport users and reduce private vehicle use.

The electrification of the South Wales MainLine to Swansea will also enhance sustainable travel choices for transport users and should reduce private vehicle use to and from the area.

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 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 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: NO₂_UK0026_Annual_1

Table 4 presents summary results for the baseline model projections for 2020, 2025 and 2030 for the NO₂_UK0026_Annual_1 exceedance situation. This shows that the maximum modelled annual mean NO₂ concentration predicted for 2020 in this exceedance situation is 37 μgm^{-3} . Hence, the model results suggest that compliance with the NO₂ 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 NO₂ 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 NO₂ model results in NO₂_UK0026_Annual_1.

	2013	2020	2025	2030
Road length exceeding (km)	19.8	0.0	0.0	0.0
Background exceeding (km ²)	0	0	0	0
Maximum modelled concentration NO ₂ (μgm ⁻³) (a)	54	37	31	28
Corresponding modelled concentration NOx (μgm ⁻³) (b)	134	81	68	61

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

(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 NO₂.

Figure 6: Background baseline projections of annual mean NO₂ 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.

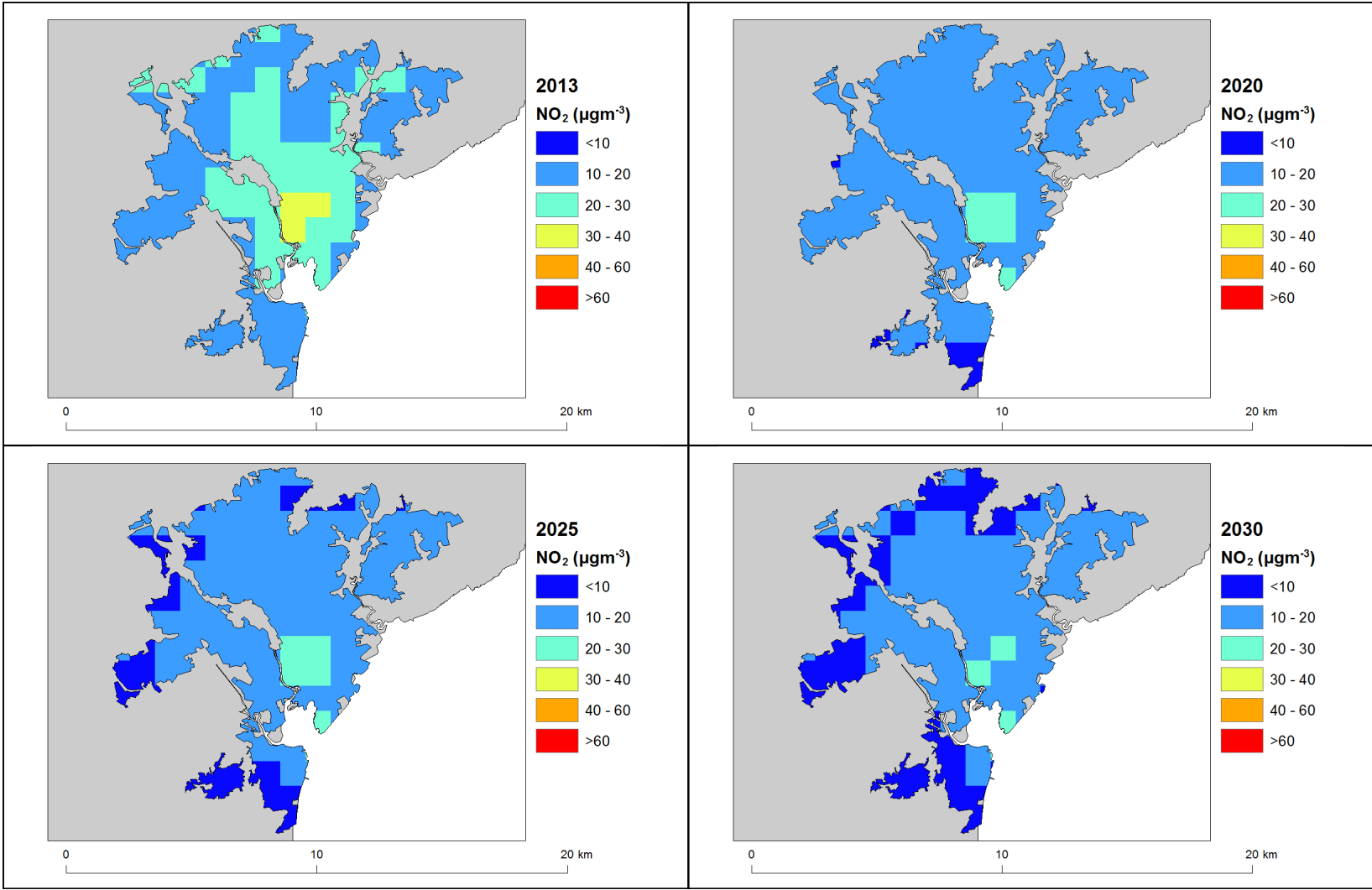
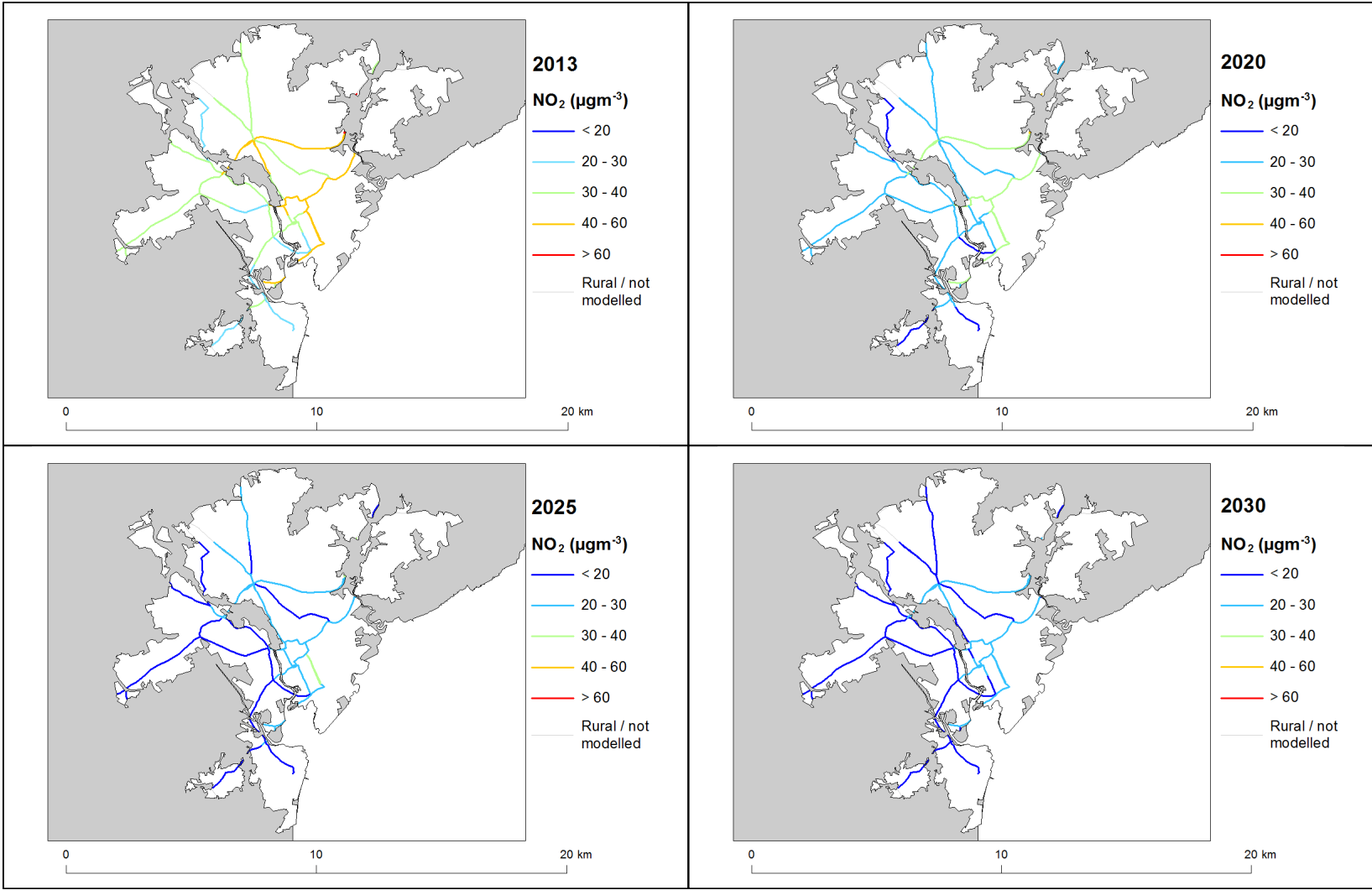


Figure 7: Roadside baseline projections of annual mean NO₂ concentrations in 2020, 2025 and 2030. 2013 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.



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/>

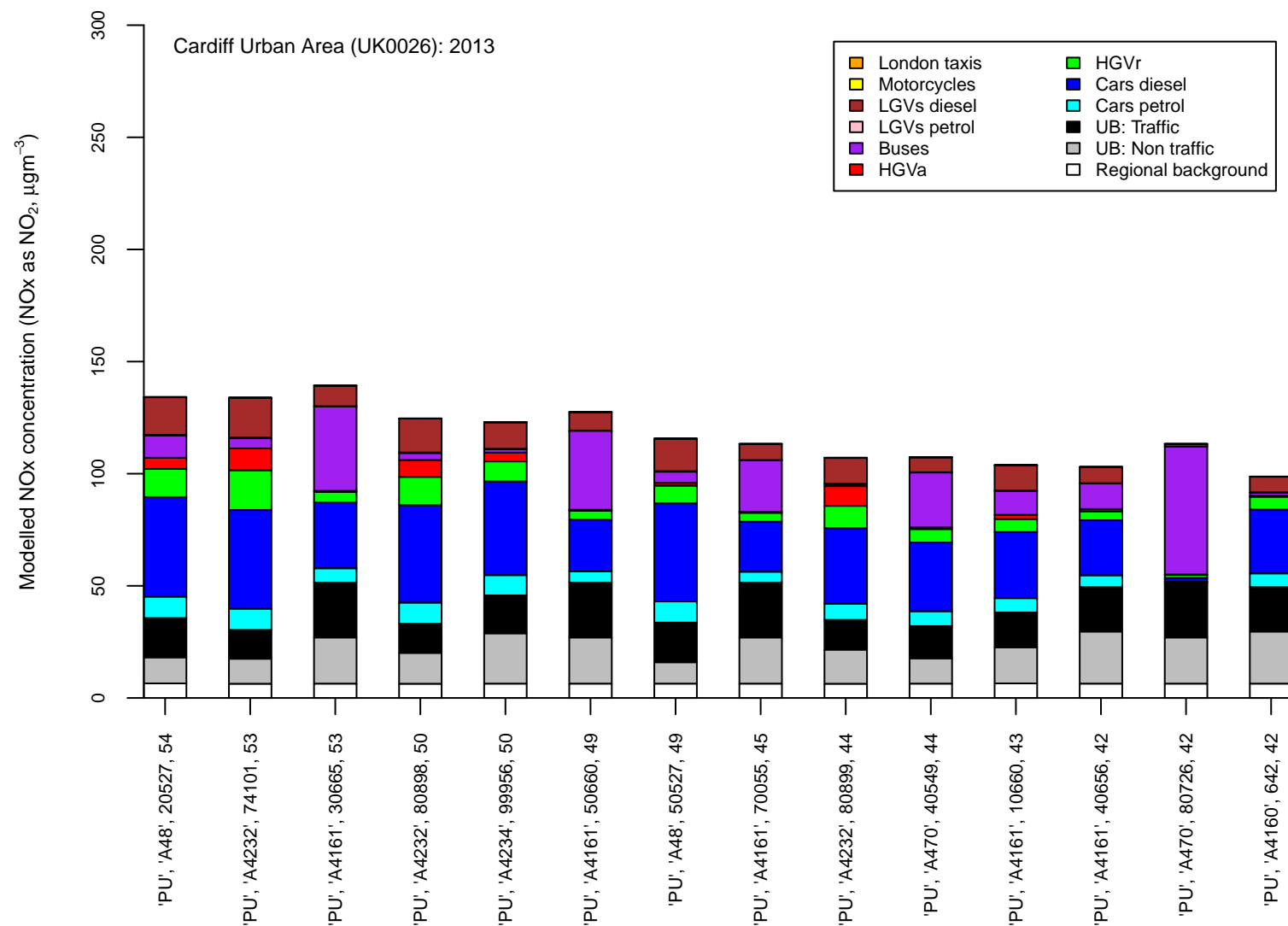
Air Quality Directive 2008/50/EC. Council Directive 2008/50/EC, of 21 May 2008. On ambient air quality and cleaner air for Europe. From the Official Journal of the European Union, 11.6.2008, En series, L152/1

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_x source apportionment plots for all roads exceeding the annual mean NO₂ limit value in 2013.



Road class (MU = motorway, PU = primary road, TU = trunk road), road number, census id 12 and modelled NO₂ concentration (µgm⁻³)

C Tables of measures

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Table C.1 Relevant Local Authority measures within Cardiff Urban Area (UK0026)

Measure code	Description	Focus	Classification	Status	Other information
Cardiff County Council_1	10 pedestrian crossing schemes implemented in 2010/11	Widening Travel Choices	Other measure: Other measure	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Traffic reduction Target emissions reduction: Not quantified
Cardiff County Council_2	The Rights of Way Improvement Plan (ROWIP) has been in operation since 2008. The document has a ten year life span and tasks detailed within the document remain relevant.	Widening Travel Choices	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2001 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Transport Indicator: Traffic reduction Target emissions reduction: Not quantified
Cardiff County Council_3	Strategic Recreational Routes	Widening Travel Choices	Other measure: Other measure	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Transport reduction Target emissions reduction: Not quantified
Cardiff County Council_4	Cycling Strategy	Cycling Improvements	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Increase in cycling Target emissions reduction: Not quantified
Cardiff County Council_5	Pont y Werin	Widening Travel Choices	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Evaluation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Increase in cycling Target emissions reduction: Not quantified
Cardiff County Council_6	Bike It	Widening Travel Choices	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Not now applicable Target emissions reduction: Not quantified

Measure code	Description	Focus	Classification	Status	Other information
Cardiff County Council_7	City Centre Transport interchange	Bus Improvements	Traffic planning and management: Improvement of public transport	Planning	Start date: 2001 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: Public Transport use Target emissions reduction: Not quantified
Cardiff County Council_8	Bus Infrastructure Improvements	Widening Travel Choices	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Public Transport use Target emissions reduction: Not quantified
Cardiff County Council_9	Park and Ride	Widening Travel Choices	Traffic planning and management: Improvement of public transport	Evaluation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Usage statistics Target emissions reduction: Not quantified
Cardiff County Council_10	Safe routes to Schools	Widening Travel Choices	Other measure: Other measure	Evaluation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Walking statistics Target emissions reduction: Not quantified
Cardiff County Council_11	Safer Routes in the Communities	Widening Travel Choices	Other measure: Other measure	Evaluation	Start date: 2001 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Walking statistics Target emissions reduction: Not quantified
Cardiff County Council_12	School Travel Plans	Widening Travel Choices	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Adoption of plans Target emissions reduction: Not quantified

Measure code	Description	Focus	Classification	Status	Other information
Cardiff County Council_13	Travel awareness campaigns	Widening Travel Choices	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2001 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: Traffic reduction Target emissions reduction: Not quantified
Cardiff County Council_14	Traffic management	Intelligent Transport Systems	Traffic planning and management: Other measure	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Road transport numbers Target emissions reduction: Not quantified
Cardiff County Council_15	Real-time Information and Bus Priority System	Intelligent Transport Systems	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Bus usage statistics Target emissions reduction: Not quantified
Cardiff County Council_16	Green Fleet and Alternative Fuel Vehicles	Air Quality	Public procurement: New vehicles, including low emission vehicles	Implementation	Start date: 2001 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Transport Indicator: Fleet management statistics Target emissions reduction: Not quantified
Cardiff County Council_17	Air Quality Monitoring linked to UTC	Air Quality	Traffic planning and management: Other measure	Other	Start date: 2002 Expected end date: 2007 Spatial scale: Local Source affected: Transport Indicator: AQ improvements Target emissions reduction: Not quantified
Cardiff County Council_18	Creation of Pedestrian-Friendly Environment of High Street/St Mary Street	Air Quality in St Mary Street AQMA	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2010 Expected end date: 2011 Spatial scale: Local Source affected: Transport Indicator: AQ improvements Target emissions reduction: To reduce emissions within the St Mary Street AQMA such that NO2 concentrations are compliant with National Air Quality Standards

Measure code	Description	Focus	Classification	Status	Other information

Table C.2 Additional measures provided by the Welsh Government which will deliver air quality improvements within Cardiff Urban Area (UK0026)

Measure code	Description	Focus	Classification	Status	Other information
Welsh Government Transport 1	Improved integration at transport interchanges	Part of the Sustainable Travel Centres Initiative.	Traffic Planning and Management: Improvement of Public Transport	Implementation	Start date: 2011 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: Not yet quantified
Welsh Government Transport 2	Personalised Workplace and School Travel Planning Programme	Part of the Sustainable Travel Centres Initiative, to encourage people to walk, cycle and use public transport for more of their local everyday journeys. Provided personalised travel planning in Cardiff area. Also developed school and workplace travel planning toolkits.	Travel Planning and Management: Encouragement of shifts of transport modes	Implementation	Start date: 2011 Expected end date: 2013 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: Not yet quantified
Welsh Government Transport 3	Cardiff City Region Metro Project	The priorities for this investment are: faster journeys / reduced generalised journey times; increased public transport use; higher quality of service; reduced operating and maintenance costs; improved reliability; capacity to meet demand; accessibility improvements; park and ride improvements; reduced emissions; and direct services to economic centres	Traffic Planning and Management: Implementation of Public Transport	Planning	Start date: 2014 Expected end date: Ongoing Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: Not yet quantified
Welsh Government Transport 4	Electrification and gauge enhancement of the South Wales Main Railway Line	Reducing emissions compared to diesel. Faster and more regular services and gauge enhancement to encourage a modal shift from road for both passengers and freight.	Traffic Planning and Management: Improvement of Public Transport	Planning	Start date: To be confirmed Expected end date: To be confirmed Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: Not yet quantified