Department for Environment Food & Rural Affairs

Department for Transport

Air Quality Plan for tackling roadside nitrogen dioxide concentrations in Tyneside (UK0005)

July 2017

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Contents

1 Introduction

1.1 This document

This document is the Tyneside agglomeration zone (UK0005) updated air quality plan for tackling roadside nitrogen dioxide (NO_2) 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 Tyneside agglomeration zone
- Details of NO_2 exceedance situation within the Tyneside 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 Tyneside 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 NO_2 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 NO_2 limit values for the protection of human health have been set in the Air Quality Directive (2008/50/EC). These are:

- The annual 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 NO_2 limit values will be achieved by 01/01/2010.

1.3 Zone status

The assessment undertaken for the Tyneside agglomeration zone indicates that the annual limit value was exceeded in 2015 but is likely to be achieved by 2022 through the introduction of measures included in the baseline. When combined with the measures outlined in the overview document for the UK we expect this zone to be compliant by 2021.

1.4 Plan structure

General administrative information regarding this agglomeration zone is presented in Section 2.

Section 3 then presents the overall picture with respect to NO_2 levels in this agglomeration zone for the 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: Tyneside
Zone code: UK0005
Type of zone: agglomeration zone
Reference year: 2015
Extent of zone: Figure 1 shows the area covered by the Tyneside 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. Durham
2. Gateshead Metropolitan Borough Council
3. Newcastle City Council
4. North Tyneside Council
5. South Tyneside Metropolitan Borough Council
6. Sunderland City Council

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

Figure 1: Map showing the extent of the Tyneside agglomeration zone (UK0005).

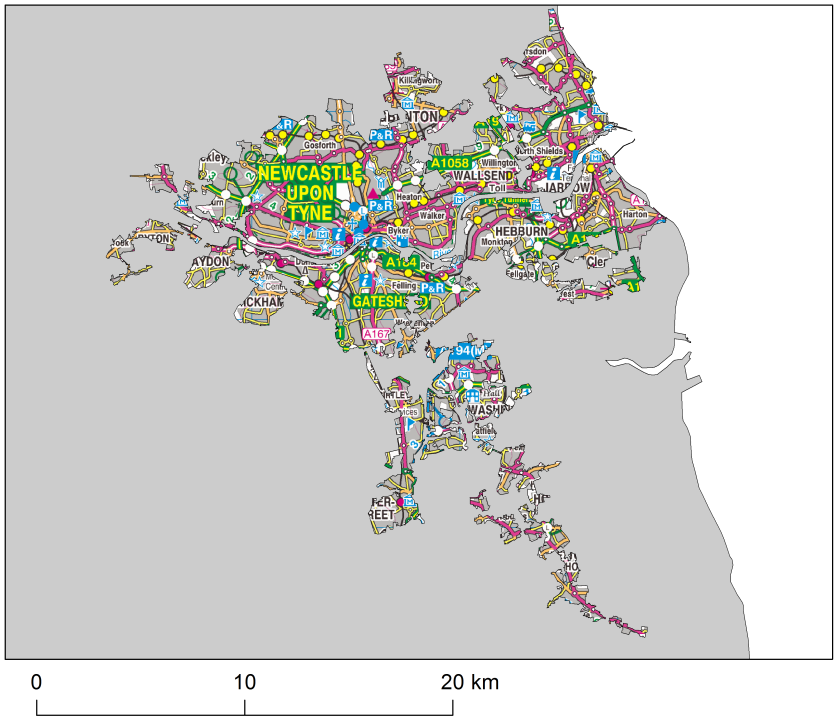
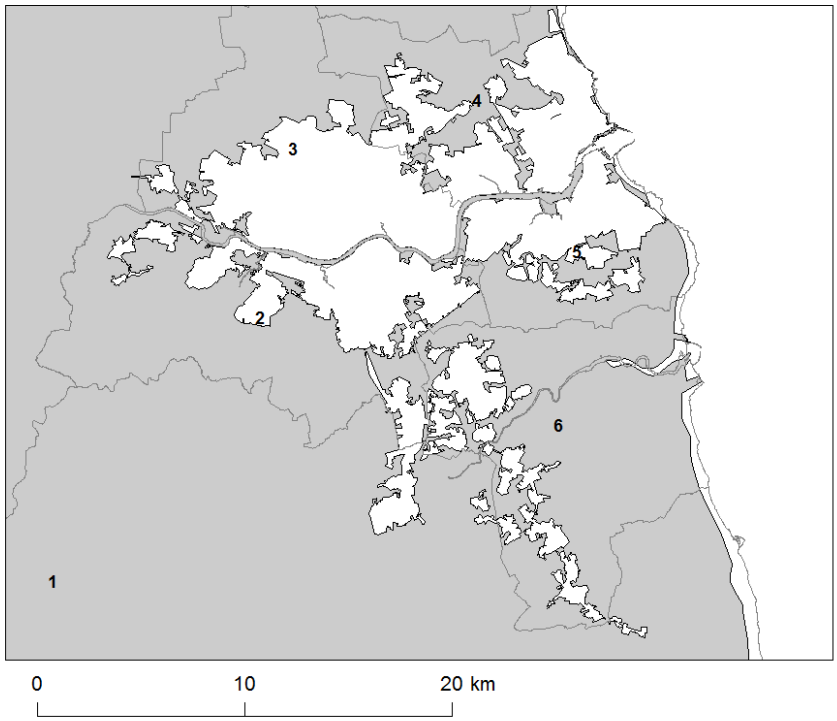


Figure 2: Map showing Local Authorities within the Tyneside agglomeration zone (UK0005).



2.2 Assessment details

Measurements

NO_2 measurements in this zone were available in 2015 from the following national network monitoring stations (NO_2 data capture[1] for each station in 2015 shown in brackets):

1. Newcastle Centre GB0568A (95%)
2. Newcastle Cradlewell Roadside GB0927A (74%)

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

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:

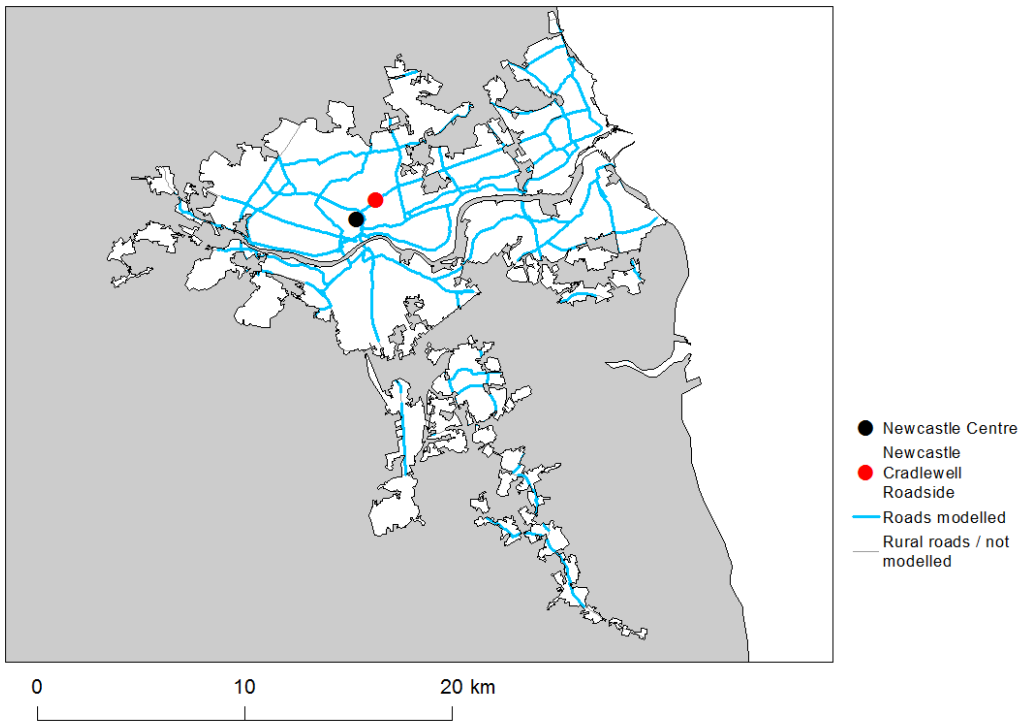
- Total background area within zone (approx): 221 km^2
- Total population within zone (approx): 770,536 people

Zone maps

Figure 3 presents the location of the NO_2 monitoring stations within this zone for 2015 and the roads for which NO_2 concentrations have been modelled. NO_2 concentrations at background locations have been modelled across the entire zone at a 1 km x 1 km resolution.

[1] Annual 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 NO_2 monitoring stations with valid data in 2015 and roads where concentrations have been modelled within the Tyneside (UK0005) agglomeration zone.



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 NO_2. 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 Tyneside agglomeration zone the annual limit value was exceeded in 2015. Hence, one exceedance situation for this zone has been defined, NO_2_UK0005_Annual_1, which covers exceedances of the annual limit value. This exceedance situation is described below.

3.2 Reference year: NO_2_UK0005_Annual_1

The NO_2_UK0005_Annual_1 exceedance situation covers all exceedances of the annual mean limit value in the Tyneside 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 NO_2 concentrations in this exceedance situation for the same time period. This table shows that, in 2015, 38.2 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 NO_2 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 (NO_2) and nitric oxide (NO). Ambient NO_2 concentrations include contributions from both directly emitted primary NO_2 and secondary NO_2 formed in the atmosphere by the oxidation of NO. As such, it is not possible to calculate an unambiguous source apportionment specifically for NO_2 concentrations; therefore the source apportionment in this plan is presented for NO_X, rather than for NO_2 (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 NO_2 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 NO_2_UK0005_Annual_1 exceedance situation (i.e. the source apportionment for all exceeding roads only) in 2015.

Table 1: Measured annual mean NO_2 concentrations at national network stations in NO2_UK0005_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
Newcastle Centre (GB0568A)	31 (86)	30 (95)	32 (93)	29 (82)	28 (95)	29 (63)	29 (86)	35 (92)	34 (90)	32 (97)	33 (98)	30 (96)	29 (97)	32 (81)	29 (95)
Newcastle Cradlewell Roadside (GB0927A)								42 (81)	39 (99)	36 (99)	38 (99)	44 (90)	56 (87)	42 (95)	41 (74)

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

Table 2: Annual mean NO_2 model results in NO_2_UK0005_Annual_1 for 2001 onwards.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Road length exceeding (km)	26.3	26.0	118.3	84.1	81.1	74.0	74.3	51.6	48.3	66.9	49.2	50.0	47.2	47.8	38.2
Background exceeding (km^2)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Maximum modelled concentration (μgm^{-3}) (a)	62.3	55.3	71.5	73.1	80.7	79.3	71.9	69.6	68.5	77.7	72	69	65	61	58

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

Table 3: Modelled annual mean NO_X source apportionment at the location with the highest NO_2 concentration in 2015 in NO2_UK0005_Annual_1 (μgm^{-3}) traffic count point 28772 on the A1; OS grid (m): 419500, 565190) .

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	5.4
	From within the UK	2.7
	From transboundary sources (includes shipping and other EU member states)	2.7
Urban background sources NOx (i.e. sources located within 0.3 - 30 km from the receptor).	Total	23.3
	From road traffic sources	18.0
	From industry (including heat and power generation)	1.5
	From agriculture	NA
	From commercial/residential sources	2.3
	From shipping	0.0
	From off road mobile machinery	1.1
	From natural sources	NA
	From transboundary sources	NA
	From other urban background sources	0.3
Local sources NOx (i.e. contributions from sources < 0.3 km from the receptor).	Total	118.0
	From petrol cars	10.5
	From diesel cars	44.2
	From HGV rigid (b)	14.6
	From HGV articulated (b)	8.7
	From buses	12.5
	From petrol LGVs (c)	0.1
	From diesel LGVs (c)	27.3
	From motorcycles	0.2
	From London taxis	0.0
Total NOx (i.e. regional background + urban background + local components)		146.8
Total NO_2 (i.e. regional background + urban background + local components)		58

(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 NO_2 concentrations 2015. Modelled exceedances of the annual limit value are shown in orange and red.

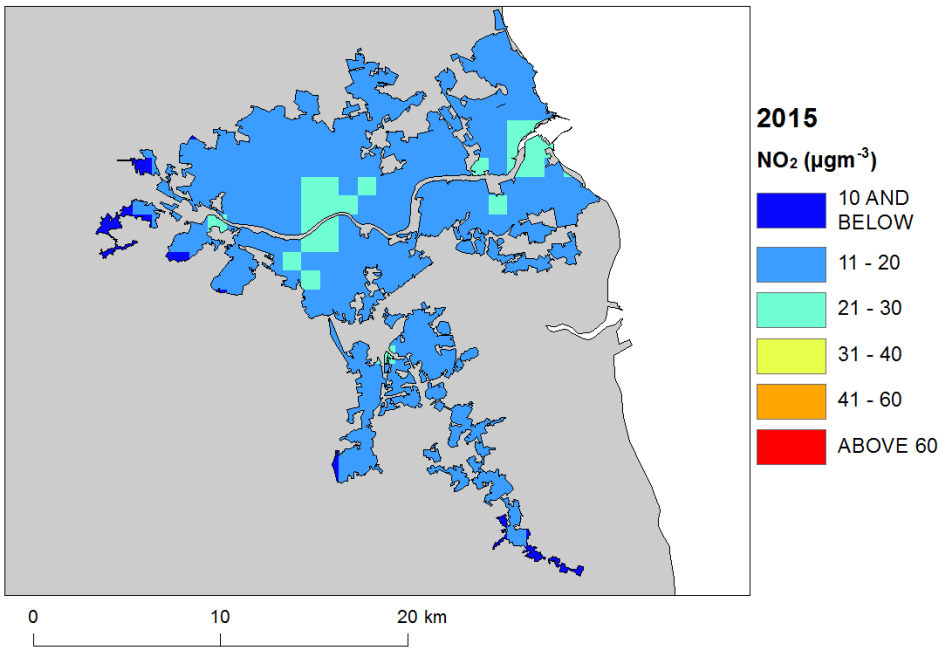
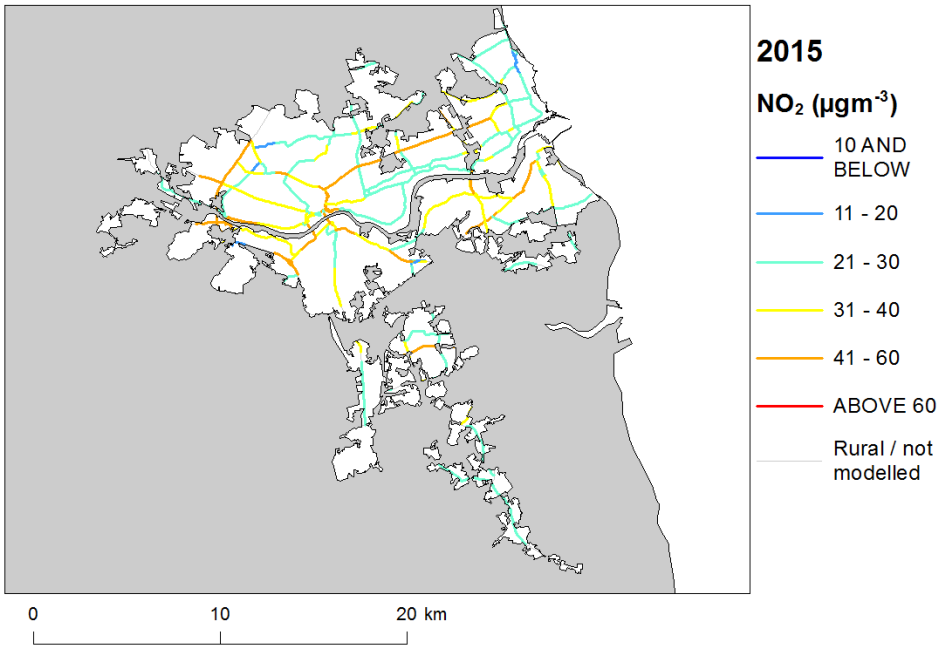


Figure 5: Map of modelled roadside annual mean NO_2 concentrations 2015. Modelled exceedances of the annual limit value are shown in orange and red.



4 Measures

4.1 Introduction

This section gives details of measures that address exceedances of the NO_2 limit values within Tyneside agglomeration zone. This includes both measures that have already been taken and measures for which there is a firm commitment that they will be taken.

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

4.2 Source apportionment

It is important to understand which sources are responsible for causing the exceedance in order to most effectively tailor measures to address the NO_2 exceedance situation 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 44.2 μgm^{-3} of NO_X out of a total of 146.8 μgm^{-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, diesel LGVs, and on some road rigid and articulated HGVs or buses were important sources on the primary roads with the highest concentrations. Diesel cars, diesel LGVs, rigid HGVs and articulated HGVs were important sources on the trunk 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 NO_2 in this agglomeration zone have been taken and/or are planned at a range of administrative levels. These are:

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

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

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.

Overview

The Tyne and Wear area (Gateshead, Newcastle, North Tyneside, South Tyneside and Sunderland) has a Local Transport Plan (LTP) strategy for 2011-2021 which highlights that a “clear zone” was introduced in Newcastle city centre. Northumberland and Durham have their own Local Transport Plans.

Since the coming together of Durham, Gateshead, Newcastle, North Tyneside, Northumberland, South Tyneside and Sunderland as the North East Combined Authority (NECA), all three LTPs are being brought together in a Transport Manifesto (2016-2030) for the enlarged region. This manifesto includes working towards a low-emission transport system and contributes to public health through improved air quality among its principles.

The LTP strategies highlighted that measures to be adopted should focus on behavioural change including modal shift away from single occupancy car travel and use low or zero emission forms of transport such as walking and cycling. A number of initiatives have already been introduced including action to encourage walking and cycling, as well as Smarter Choices and Be Air Aware campaigns that aim to influence the choice of travel modes and make people more informed on the need to improve air quality.

The NECA region is taking an ambitious and holistic approach to improving air quality, with a variety of measures embedded in ongoing work to ensure that steps are taken to reduce emission figures. Measures include:

Infrastructure

- The NECA region is undergoing major infrastructure improvements, ranging from the upgrading of strategic roads (by Highways England) to better manage capacity with significant improvements on the A1, where exceedances exist, completed in 2016 and further improvements planned in 2020, to the provision of public transport and cycling infrastructure to promote sustainable travel modes.

- Two successful Cycle City Ambition Fund bids in 2013 and 2015 have provided funding to implement and improve these facilities and infrastructure, including the provision of the Great North Cycleway running through Newcastle to Gateshead which will eventually link Darlington to Blyth, providing safe and viable alternatives to the car. All infrastructure schemes in Newcastle City Centre will aim to include measures to promote bus reliability, as well as upgrading traffic signals to an intelligent UTMC-compliant system, allowing transport flows to be better managed to reduce congestion.

- In South Tyneside Council area, the Lindisfarne Junction AQMA is centred upon the A19 trunk road junction with the A194, approaching the Tyne Road Tunnels. The new tunnel opened in 2011, increased capacity alleviated congestion originally associated with peak hour flows and daily traffic. There are major schemes proposed for the main junctions both north and south of the Tyne tunnel, in South Tyneside at Lindisfarne within the AQMA, at Tyne Dock on the A194/A185 junction and in North Tyneside at the junction of the A19 and A1058 (Coast Road). These schemes are intended to alleviate congestion.

- Local schemes in Newcastle and Gateshead AQMAs have and continue to improve the environment in these centres by enhancing facilities for pedestrians and cyclists and removing through traffic. These areas include Trinity Square and West Street in Gateshead, Central Station and John Dobson Street in Newcastle.

Technology

- The North East benefitted from the Plugged-in Places programme and has the highest number of electric vehicles outside of London.

- NECA was successful in securing funding from OLEV’s Go Ultra Low Scheme. This funding will allow the region to implement an EV filling station, innovative approaches to the provision of EVs in housing developments and also an electric vehicle travel club. This project involves key stakeholders from the region including expertise from academia, local business and the international automotive industry.

- The Tyne and Wear Urban Traffic Management and Control centre actively manages traffic to improve journey reliability, monitors air quality feeds from locations across the region and provides travel information to the public.

Behavioural Change

- Tyne and Wear has a track record of implementing behavioural change programmes. These include the Be Air Aware and Smarter Choices campaigns and several other behavioural change campaigns which aim to promote modal shift and active travel.
- Go Smarter, including Go Smarter to Work and Go Smarter to School, is a Tyne and Wear regional Local Sustainable Transport Fund programme to reduce the impacts of congestion through projects targeting businesses and school children designed to increase active travel, public transport use and reduce reliance on private vehicles with consequent air quality benefits.
- Cycling in the City, in conjunction with Department for Transport and Public Health, aims to promote cycling in Newcastle not only for environmental reasons but also for health benefits.

Policy and Legislation

- Legislation has been implemented to enable authorised individuals to issue fixed penalty notices to vehicles idling on a road and require them to switch off engines.
- NECA is taking steps towards the implementation of Quality Bus Contracts in the Tyne and Wear area. This may define requirements for higher quality vehicle emission standards.
- The Core Strategy for Newcastle and Gateshead, adopted in 2015, has as strategic objectives increasing walking and cycling, minimising through traffic in the city centre core and reducing CO_2 emissions. The Strategy also references the need for Freight Delivery Service Plans which will require the use of more environmentally-friendly delivery vehicles.
- Policy in Newcastle and Gateshead is informed by the recent Low Emission Zone feasibility study. This study forecast using traffic and air quality models, likely emission profiles for future years and considered appropriate mitigation measures. The outcome of the work has been to continue working closely with stakeholders such as bus operators, the taxi industry and fleet operator within the region to implement the measures set out in the study.

Innovation and Ambition

- The Tyne and Wear LTP has implemented a Fleet Quality Partnership across the sub region. This partnership has promoted a range of measures including routing information and a good driver scheme.
- Trials of innovative new technology are also underway in order to reduce congestion, including the Compass 4D project with Newcastle University and the UTMC centre.
- In March 2017 Gateshead Metropolitan Borough Council was awarded £396,000 from the Air Quality Grant Fund to bring forward improvements in air quality in Gateshead town centre Air Quality Management Area (AQMA) to deliver the following key elements by March 2018:
  - Traffic management using real time monitoring motes co-located at traffic signals managed by urban traffic management and control (UTMC) used to investigate and develop UTMC strategies that optimize congestion, air quality and public transport;

- Introduction of 4 electric vans to the Council fleet replacing diesel vans and providing 2 electric vehicles and 2 hybrid vehicles to the car club with additional charging points;
- Continuing the successful Schools Go Smarter programme engaging children and schools in active travel activities and awareness;
- Behavioural change through the 'Make the Switch' programme, which engages with the public to increase awareness of air quality issues and the benefits of active travel and public transport;
- Cleaning the taxi fleet through changes to taxi licensing by reviewing and consulting on a policy focused on emissions of vehicles rather than age.

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 NO_2 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: NO_2_UK0005_Annual_1

Table 4 presents summary results for the baseline model projections for each year from 2017 to 2030 for the NO_2_UK0005_Annual_1 exceedance situation. This shows that the maximum modelled annual mean NO_2 concentration predicted for 2020 in this exceedance situation is 46 μgm^{-3}. By 2022, the maximum modelled annual mean NO_2 concentration is predicted to drop to 40 μgm^{-3}. Hence, the model results suggest that compliance with the NO_2 annual limit value is likely to be achieved by 2022 under baseline conditions.

Figure 6 and 7 presents maps of projected annual mean NO_2 concentrations at background and roadside locations respectively in 2022, the year at which compliance is achieved. For reference Figures 8 and 9 show maps of projected annual mean NO_2 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 NO_2 model results in NO_2_UK0005_Annual_1.

	2015	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Road length exceeding (km)	38.2	24.6	23.3	13.5	8.9	3.7	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)	58	54	52	49	46	43	40	38	36	34	32	31	29	28	27
Corresponding modelled concentration NOx (μgm^{-3}) (b)	147	134	125	117	109	99	91	84	78	74	69	65	61	58	56

(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 NO_2.

Figure 6: Background baseline projections of annual mean NO_2 concentrations in 2022, the year at which compliance is achieved under baseline conditions. Modelled exceedances of the annual limit value are shown in orange and red.

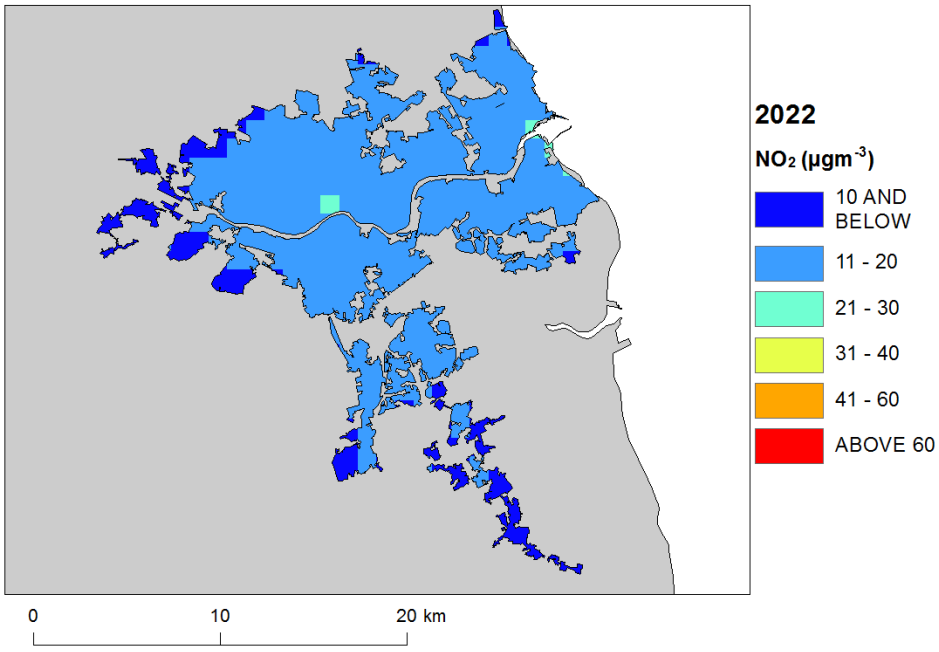


Figure 7: Roadside baseline projections of annual mean NO_2 concentrations in 2022, the year at which compliance is achieved under baseline conditions. Modelled exceedances of the annual limit value are shown in orange and red.

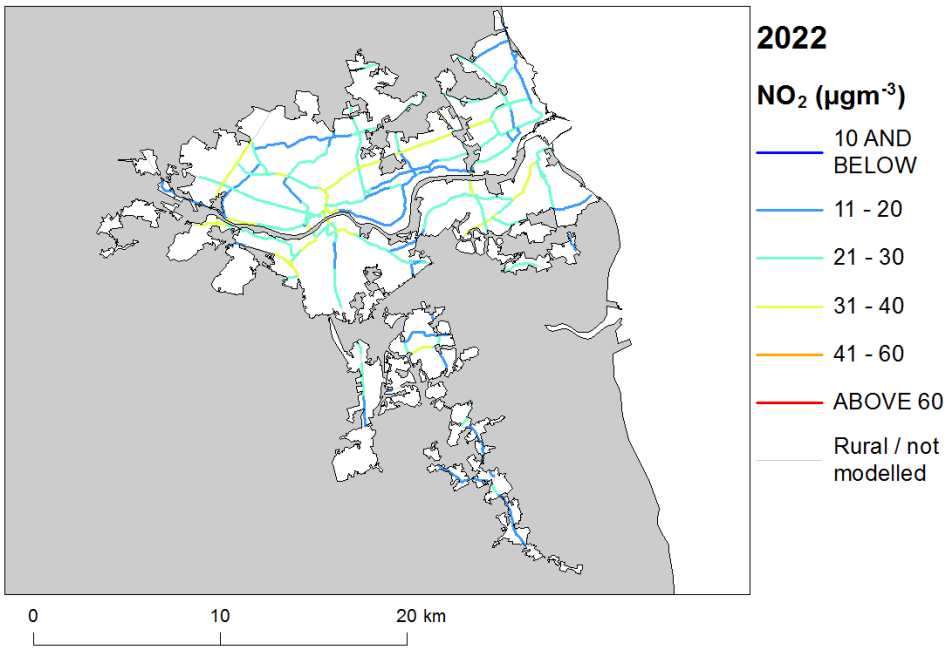


Figure 8: Background baseline projections of annual mean NO_2 concentrations in 2020, 2025 and 2030. 2015 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.

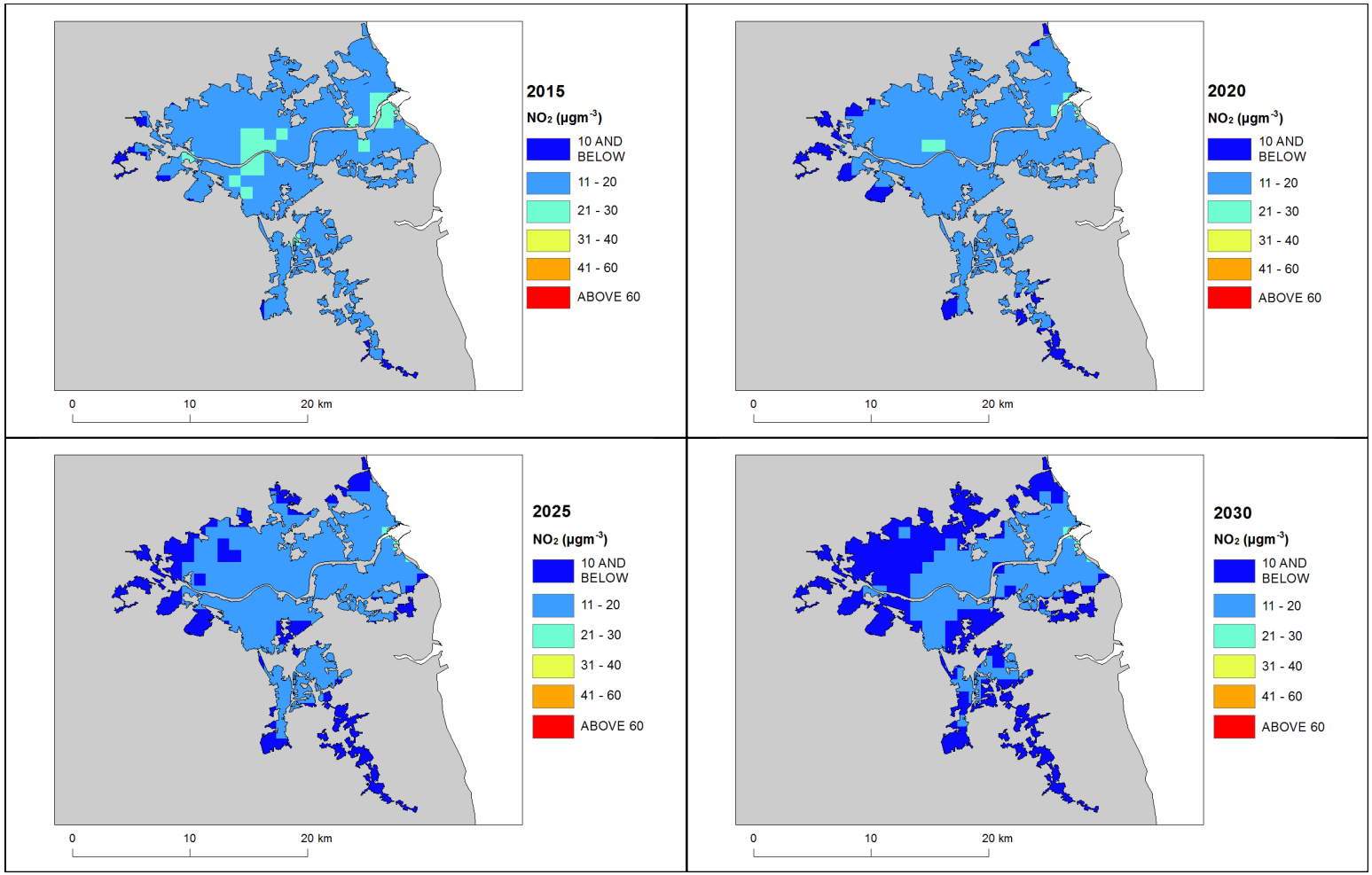
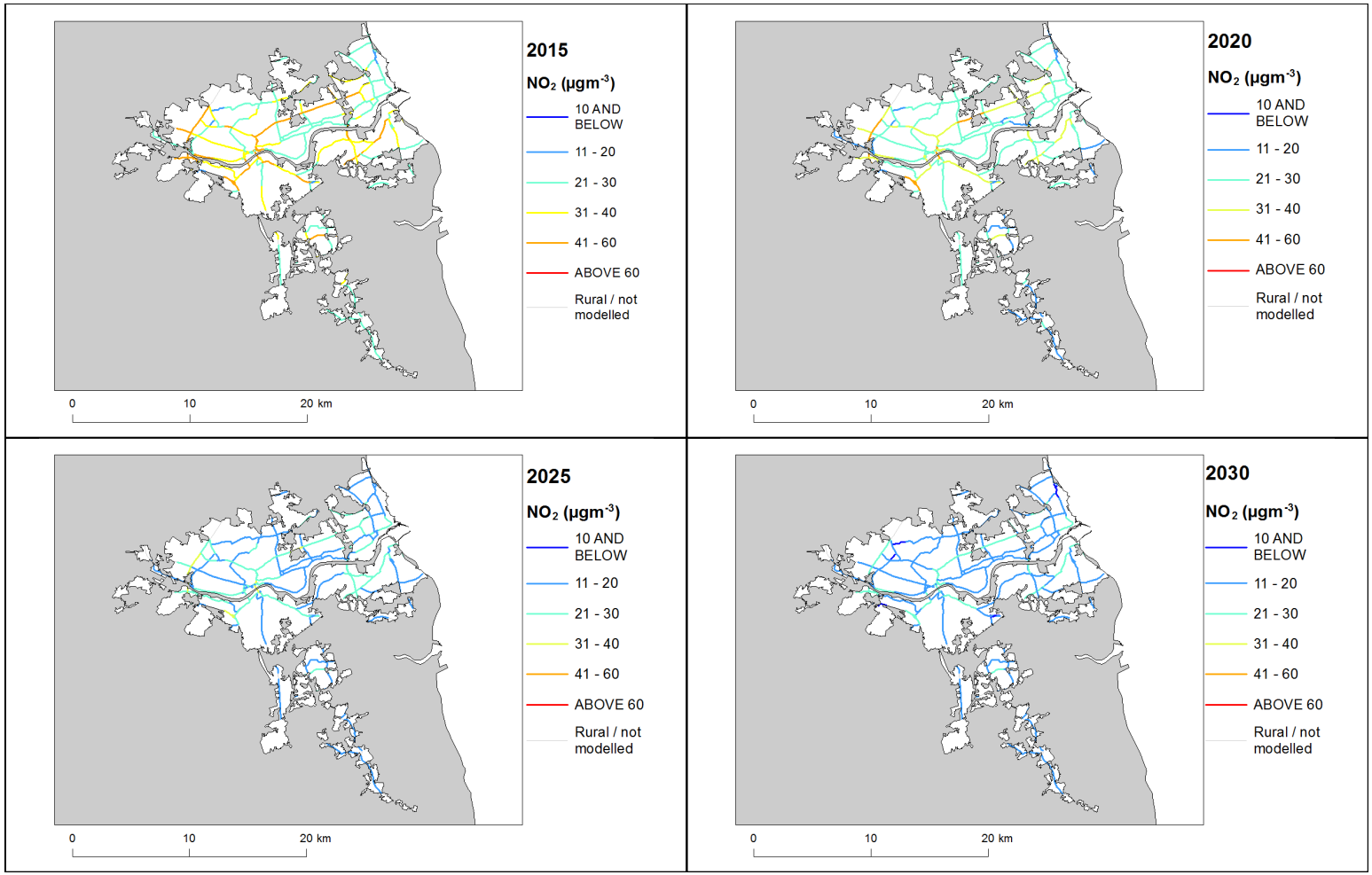


Figure 9: Roadside baseline projections of annual mean NO_2 concentrations in 2020, 2025 and 2030. 2015 is also included here for reference. Modelled exceedances of the annual limit value are shown in orange and red.



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.

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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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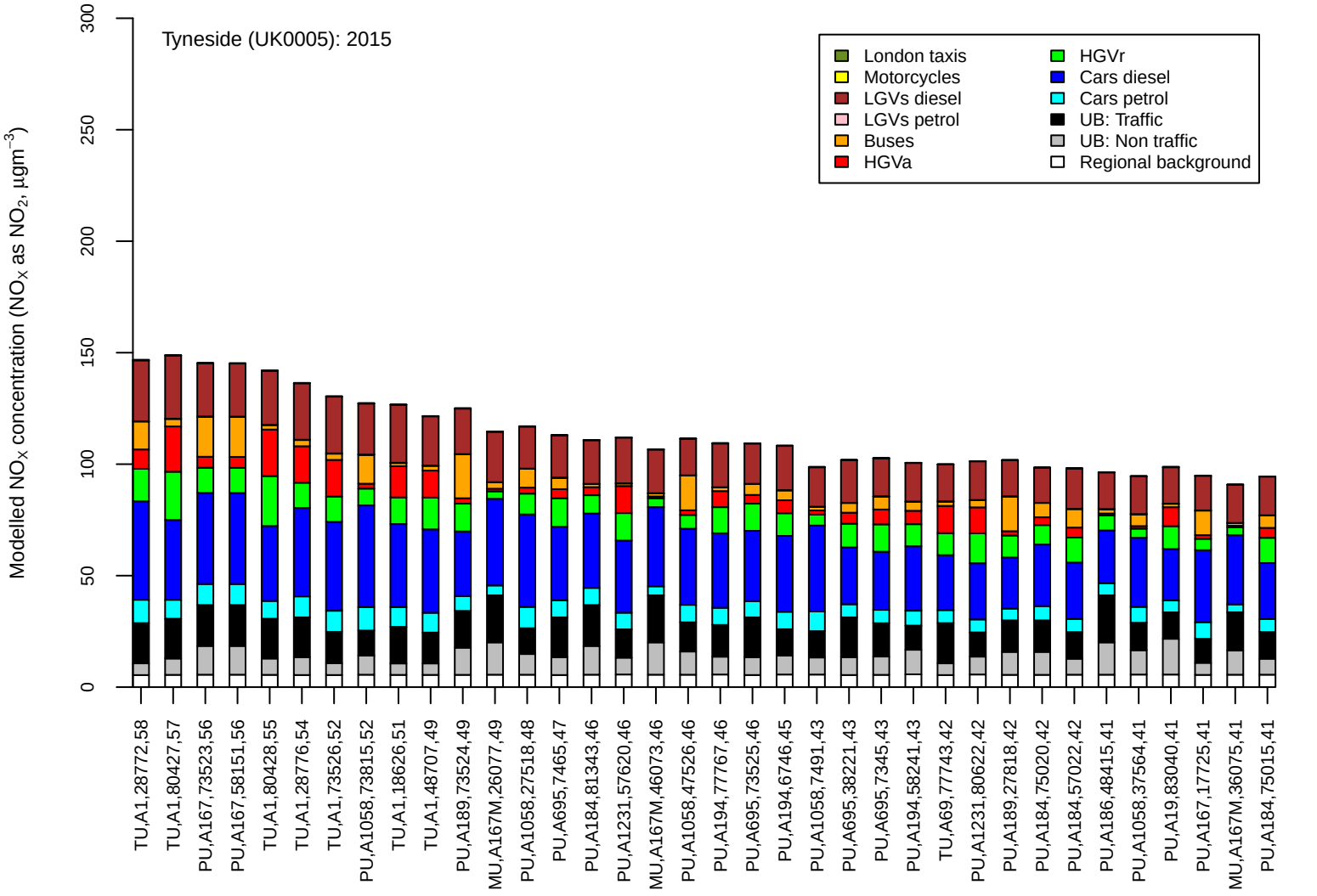
Figure B.1: Annual mean roadside NO_X source apportionment plots for all roads exceeding the annual mean NO_2 limit value in 2015.



Road class (MU = motorway, PU = primary road, TU = trunk road), road number, census id 15 and modelled NO_2 concentration (μgm^{-3})

C Tables of measures

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Table C.1 Relevant Local Authority measures within Tyneside (UK0005)

Measure code	Description	Focus	Classification	Status	Other information
Durham_1	The retrofitting of abatement systems on diesel engines on buses using routes within the declared AQMA.	To improve emissions of air pollutants from the exhaust systems of buses that are operating within the declared AQMA	Public procurement: Other measure	Evaluation	Start date: 2014 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: The number of buses as a proportion of the bus fleets that have been retrofitted with abatement systems. Target emissions reduction: Approx.: 6% (Reduction in NOx)
Durham_2	The encouragement of the expansion of hybrid buses using routes within the declared AQMA.	To expand the proportion of 'hybrid' buses within the bus fleets that operate within the declared AQMA and therefore improving the emission profile of the bus fleets operating within the AQMA.	Public procurement: Other measure	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: The number of buses as a proportion of the bus fleets that are 'hybrids'. Target emissions reduction: Approx.: 0.6 % (Reduction in NOx)
Durham_3	The introduction of an Urban Traffic Control System and SCOOT to coordinate traffic through a network of junctions within Durham City	To achieve a better flow of vehicles through the AQMA and therefore to reduce the length of queues and congestion within the declared AQMA	Traffic planning and management: Other measure	Evaluation	Start date: 2017 Expected end date: 2017 Spatial scale: Whole town or city Source affected: Transport Indicator: A reduction in the length of queues and therefore of congestion within the AQMA. Target emissions reduction: Approx. 12% (Reduction in NOx)
Durham_4	The operation of Park and Ride buses that are compliant with Euro VI and/or the possible replacement of these with electric powered vehicles	To minimise the emissions of air quality pollutants from the operation of Park and Ride buses that operate to and from the three existing Park and Ride sites with a view to eliminating these emissions in the future.	Traffic planning and management: Improvement of public transport	Evaluation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: The buses operating on the Park & Ride routes are now compliant with Euro VI Emission Standard. To explore the possible replacement of the current buses with electric powered vehicles Target emissions reduction: Approx. 0.7% (Reduction in NOx) from the introduction of Euro VI Standard buses and Approx. 1.2% (Reduction in NOx) from the introduction of electric buses.

Measure code	Description	Focus	Classification	Status	Other information
Durham_5	The development of a cycleway infrastructure across Durham City	To extend the existing cycleway infrastructure to encourage the uptake of cycling as an alternative means of travel to the use of the private motor car.	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: The length of new cycle routes constructed over an annual period for comparison with the strategic cycling objectives. Target emissions reduction: Approx. 5.0% (Reduction in NOx) assumes a modal shift of 7% from existing travel options.
Durham_6	The promotion of 'smarter' travel choices and options with businesses across the city.	To implement measures to encourage employees to reduce the dependency or use of single occupied vehicles.	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: The number of companies that have registered travel planning and car sharing schemes across the city. Target emissions reduction: Approx. 4.0% (Reduction in NOx)
Durham_7	To undertake detailed dispersion modelling of air quality emissions from any development growth and infrastructure that may potentially have an impact on air quality within and on the periphery of the declared AQMA.	To ensure that the air quality impacts that may arise from developments and infrastructure projects are assessed to enable opportunities to mitigate any detrimental impacts and potential benefits are identified	Other measure: Other measure	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Not Applicable Target emissions reduction: Not Assessed
Durham_8	Explore the options for additional highway infrastructure in line with the Durham Sustainable Transport Strategy, taking into account environmental, financial and planning considerations to enable the removal of through traffic from the city centre and contribute to the overall reduction of traffic emissions.	To reduce the volume of traffic on routes through Durham City.	Other measure: Other measure	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: The reduction in the volumes of traffic. Target emissions reduction: Not Assessed

Measure code	Description	Focus	Classification	Status	Other information
Durham_9	The establishment of Air Quality and Planning Guidance as a Supplementary Planning Document	To raise the importance of Air Quality issues in the planning process and to ensure the impacts on air quality from each development is minimised.	Other measure: Other measure	Preparation	Start date: 2018 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: Reduce the reliance on the use of private cars in new development and adherence to the latest guidance on Planning and Air Quality Target emissions reduction: Not Assessed
Durham_10	The establishment of an Air Quality Strategy	To integrate the strategic policies that cover air quality in the County Durham Plan with other policies and the measures detailed within the Local Transport Plan (LTP) to focus and address air quality issues within Durham City.	Other measure: Other measure	Preparation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: The adoption of the strategy. Target emissions reduction: Not Assessed
Durham_11	To raise awareness of air quality through a range of appropriate campaigns to reduce air pollution.	To promote air quality by the dissemination of information to stakeholders including the public - through the website, consultation media releases and through campaigns.	Public information and Education: Internet	Planning	Start date: 2017 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: The number of events. Target emissions reduction: Not Assessed
Durham_12	The introduction of variable message and carpark direction signing system to direct traffic to available parking.	To provide information on congestion in areas of the city and the provision of car parking spaces.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2017 Expected end date: 2017 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: Not Applicable Target emissions reduction: Not Assessed
Durham_13	Explore the provision of travel and driver information integrated with the Urban Traffic Management Control system and to explore the provision of information on air quality through the use of texts, email alerts and social networking.	To provide information to drivers on travelling conditions and air quality in Durham City.	Public procurement: Other measure	Evaluation	Start date: 2017 Expected end date: 2017 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: Not Applicable Target emissions reduction: Not Assessed

Measure code	Description	Focus	Classification	Status	Other information
Durham_14	To explore whether it is viable or not to progress the introduction of variable charges for residential parking permits with the introduction of preferential rates for low polluting vehicles	To encourage the use of low emissions vehicles.	Traffic planning and management: Differentiation of parking fees	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: The reduction of traffic volume flowrates on routes within the declared Air Quality Management Area. The action covers the initial stage of undertaking a study to determine the viability of introducing such a scheme or not is to be undertaken in May 2017. Target emissions reduction: Not Assessed
Durham_15	To explore whether it is viable or not to extend existing Park & Ride routes and/or the provision of further Park & Ride sites, taking into consideration the emerging County Durham Plan and Sustainable Transport Strategy for Durham City.	To encourage the use of alternative modes of travel to the use of the private motor vehicle.	Traffic planning and management: Improvement of public transport	Evaluation	Start date: 2017 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: The reduction of traffic volume flowrates on routes within the declared Air Quality Management Area. The action covers the initial stage of undertaking a study to determine the viability of carrying out the improvements to the existing Park & Ride facilities or not is to be undertaken in May 2017 Target emissions reduction: Not Assessed
Gateshead Metropolitan Borough Council_1	Parking strategy	Reduce attractiveness of car use	Traffic planning and management: Management of parking places	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: Charging levels 1 hr 1, 2 hr 1.70, 3 hr 2.60, all day 4.10 Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_2	Public transport infrastructure	Improve attractiveness of alternatives to the car	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Implementation of improvements Target emissions reduction: Not known

Measure code	Description	Focus	Classification	Status	Other information
Gateshead Metropolitan Borough Council_3	Pedestrian infrastructure improvements	Improve attractiveness of alternatives to the car	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Local Source affected: Transport Indicator: Implementation of improvements. Removal of subways saw pedestrian usage increase by 14% (2001-10), compared with 17% decrease elsewhere Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_4	Cycle improvements	Improve attractiveness of alternatives to the car	Traffic planning and management: Expansion of bicycle and pedestrian infrastructure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: Implementation of improvements. 61% increase in numbers cycling to wok in Gateshead between 2001-2011 Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_5	Bus operation	Improve attractiveness of alternatives to the car	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2016 Expected end date: 2021 Spatial scale: Whole agglomeration Source affected: Transport Indicator: New approach to planning and management of bus network Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_6	Intelligent transport systems	Better management of traffic flows and congestion	Traffic planning and management: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Levels of congestion and delay, air quality. Improved monitoring has enabled 5% reduction in delay on main corridors. Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_7	Park and ride	Improve attractiveness of alternatives to the car	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2015 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Use of park and ride Target emissions reduction: Not known

Measure code	Description	Focus	Classification	Status	Other information
Gateshead Metropolitan Borough Council_8	Travel planning	Increase use of alternatives to the car	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2018 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Reduced car mode share. Urban core (Gateshead & Newcastle). No. people engaged and activities delivered. Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_9	Low emission zone	Reduced access to polluting vehicles	Traffic planning and management: Low emission zones	Implementation	Start date: 2014 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/a Target emissions reduction: N/a
Gateshead Metropolitan Borough Council_10	Reduce bus emissions	Reduce pollution from vehicles	Retrofitting: Retrofitting emission control equipment to vehicles	Implementation	Start date: 2014 Expected end date: 2017 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Reduced pollution from buses Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_11	Congestion	Improve journey reliability/flows on A1	Traffic planning and management: Other measure	Implementation	Start date: 2015 Expected end date: 2016 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Improved journey times Target emissions reduction: N/a
Gateshead Metropolitan Borough Council_12	Transport planning	Development of a region-wide transport plan	Other measure: Other measure	Implementation	Start date: 2015 Expected end date: 2030 Spatial scale: Whole agglomeration Source affected: Transport Indicator: Range of indicators Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_13	Improving fleet emissions	Implementation of EVs to improve AQ	Public procurement: New vehicles, including low emission vehicles	Implementation	Start date: 2017 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Transport Indicator: Reduction in NO2 Target emissions reduction: Not known

Measure code	Description	Focus	Classification	Status	Other information
Gateshead Metropolitan Borough Council_14	ULEV Car club	Demand management and AQ	Other measure: Other measure	Implementation	Start date: 2017 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Transport Indicator: Uptake, miles travelled Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_15	Taxi licensing	Cleaning the hackney and private hire fleet	Permit systems and economic instruments: Introduction/increase of environment taxes	Implementation	Start date: 2017 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Transport Indicator: CO, NO, NO2 emissions reductions, per mile Target emissions reduction: Not known
Gateshead Metropolitan Borough Council_16	Air Quality awareness	Awareness raising about AQ issues and improvements	Public procurement: Other measure	Implementation	Start date: 2017 Expected end date: 2018 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Gateshead Metropolitan Borough Council_17	20mph zones	Area based safety and environmental improvements	Traffic planning and management: Reduction of speed limits and control	Implementation	Start date: 2001 Expected end date: 2025 Spatial scale: Whole town or city Source affected: Transport Indicator: Casualty reduction Target emissions reduction: N/A
Gateshead Metropolitan Borough Council_18	Bus lane enforcement	Ensuring proper use of bus lanes, reliable bus journeys	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2015 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_1	Residents parking permits	18,000 residents/visitor parking permits issued.	Other measure: Other measure	Implementation	Start date: 2001 Expected end date: 2030 Spatial scale: Local Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_2	Specific bus corridors including bus lanes, or segregation of buses.	St. Mary’s Place bus corridor scheme implemented. Consideration is now being given to Sandyford Road Corridor. Identified public transport corridors in 2015 Cabinet report. CITS Corridor trial.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2001 Expected end date: 2020 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_3	Increase public transport priority	Urban Core Area Action Plan went out for consultation 2011. Intro of bus priority enforcement on John Dobson Street (JDS), Tyne Bridge, High Level etc in 2015/16. Political reluctance to switch on Central Station cameras for penalties. Urban Core Plan adopted in 2016.	Other measure: Other measure	Implementation	Start date: 2011 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_4	Higher priority for pedestrians and cyclists (in terms of highway space)	Urban Core Area Action Plan went out for consultation 2011. Taking place through Cycle City Ambition. e.g JDS. Urban Core Plan adopted in 2016.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_5	Decriminalized parking enforcement	Introduced on 15 April 2009. The transfer of enforcement powers from the police to the council to help reduce congestion and improve road safety.	Other measure: Other measure	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
Newcastle City Council_6	Urban traffic management control (UTMC). Ongoing experiment with SMART (intelligent traffic light system)	In process of implementation	Traffic planning and management: Other measure	Implementation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_7	Encourage low emission/ zero emission vehicles	Diesel electric hybrid buses were operating on Quaylink Quayside/City Centre Route. These buses have been removed from Q3 circulation. Hydrogen Alliance in discussion with bus operator about hydrogen fueled buses	Other measure: Other measure	Implementation	Start date: 2004 Expected end date: 2006 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_7b	Encourage low emission/ zero emission vehicles	Clean Bus transport fund	Retrofitting: Retrofitting emission control equipment to vehicles	Evaluation	Start date: 2013 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_7c	Encourage low emission/ zero emission vehicles	Clean Vehicle transport fund	Retrofitting: Retrofitting emission control equipment to vehicles	Implementation	Start date: 2015 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_8	Enforcing idling engines legislation	All staff within RSPP are authorised to issue fixed penalty notices, and periodic enforcement is currently carried out. Legislation is flawed by requirement to instruct driver to turn off engine before issue of notice, thus making it impossible to issue notice and actually carry out enforcement. 2017 Posters placed at locations within AQMA where engine idling has become a problem, eg, bus/coach stops and taxi ranks	Other measure: Other measure	Implementation	Start date: 2008 Expected end date: 2020 Spatial scale: National Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_9	Delivery times outside peak hour	A freight consolidation centre operational in Newburn from July 2011. Hours of freight delivery will be co-ordinated around quieter times, in lower emission vehicles. Freight consolidation to be reviewed.	Traffic planning and management: Freight transport measure	Evaluation	Start date: 2006 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_10	Taxi emissions	Taxi licensing strategy was reviewed in 2011 and emission standard will be gradually introduced. Not completed in 2011 - now underway in 2017 to include age limitations and Euro emission requirements on vehicles (EURO 5)	Public procurement: Cleaner vehicle transport services	Planning	Start date: 2011 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_11	Use of low emission delivery vehicles/ times of delivery	To be considered as part of freight consolidation. Freight consolidation to be reviewed.	Other measure: Other measure	Evaluation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_12	Low emission zone	Part of Urban Core Area Action Plan. LEZ study completed. Not recommended. Based on compliance being achieved by 2020. Results being reviewed in light of DEFRA predictions and COPERT factors	Other measure: Other measure	Other	Start date: 2013 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_13	Speed Restrictions	The speed restriction scheme 20's Plenty has been rolled out across large parts of the Gosforth area of Newcastle and is an advisory scheme to encourage people to reduce their speed on selected streets and roads across Newcastle.	Traffic planning and management: Reduction of speed limits and control	Evaluation	Start date: 2009 Expected end date: 2011 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_14	Upgrade of Urban Traffic Control (UTC) and Scoot	Signal coordination currently being upgraded as part of the UTMC project.	Traffic planning and management: Other measure	Implementation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_15	Park and Ride	To be implemented through both bus and Metro. Metro Park and Rides in operation along with Great Park bus & Soccerbus	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_16	Promotion of Cycling	To be implemented through the cycle strategy	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_17	Annual Travel Card discount	This has been rolled out to Newcastle Council staff, and major employers are being encouraged by Nexus to join the scheme.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2010 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Other, please specify Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_18	Quality bus contracts	Discussions were undertaken between regional bus operators and local authorities on Quality bus partnerships. Part of this could be geared around higher quality vehicle emission standards	Other measure: Other measure	Planning	Start date: 2015 Expected end date: 2017 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_19	Travel Plans for businesses/ schools	Developing programmes from Local Transport Plan 1 and 2 (LTP1 and LTP2). All schools achieved school travel plans and these are now being refreshed.	Other measure: Other measure	Implementation	Start date: 2005 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_20	Alternative Travel	Work is continuing with the football club and key stakeholders to implement a number of measures to mitigate the negative impacts of travel to St James' Park. Current arrangements about to be reviewed but updated arrangements to be in place	Traffic planning and management: Encouragement of shift of transport modes	Evaluation	Start date: 2010 Expected end date: 2020 Spatial scale: Local Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_21	Car Loan schemes	Pool car system currently on-going by some employers.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2020 Spatial scale: Local Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_22	Use of car parking charges to encourage alternatives.	Under investigation as part of the core strategy. Believe this is actually going the other way e.g Alive after Five, pay-on-exit etc although removal of free parking proposed in favour of chargeable. Parking strategy encourages Green Travel Hub at Science Central with EV charging, cycle parking and journey planning advice	Traffic planning and management: Encouragement of shift of transport modes	Other	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_23	Car Clubs	Car clubs are being developed and new cars added as demand arises for this. Car club contract being reprocured.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_24	Home Zones	Currently programmed as part of Plan Partners LTP schemes. Home Zones as a project dropped although some of principles carried through in new housing developments. Superseded by Streets for People Community Areas?	Other measure: Other measure	Other	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_25	Electric Vehicle Recharging Infrastructure	Completed but with ongoing maintenance issues New GUL/OLEV projects. Increasing pressure on existing charging network and pressure to start charging for it. ERDF funding to research best way to deploy rapid chargers and best operating and business model for regional network going forward.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2015 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_26	Electric Vehicles in NCC Fleet	25 electric vehicles already in fleet	Other measure: Other measure	Implementation	Start date: 2007 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_27	Switch EV Council Trial	Complete	Other measure: Other measure	Other	Start date: 2014 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_28	Switch EV Public Trial	Complete	Public procurement: Cleaner vehicle transport services	Other	Start date: 2014 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_29	Switch EV Car club trial	Complete	Public procurement: Cleaner vehicle transport services	Other	Start date: 2014 Expected end date: 2014 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_30	Eco driving training	Completed but not within NCC Remit. Low take up among council drivers/no resource to continue	Other measure: Other measure	Implementation	Start date: 2011 Expected end date: 2016 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_31	Subsidise public transport	To be implemented by way of concessionary fares. Out of NCC control - with Nexus	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2016 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_32	Create extra capacity on trains/ Metro/buses	Operator investment as deemed appropriate. Out of NCC control - believe Nexus have submitted a bid for rolling stock refurb and extra capacity.	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2010 Expected end date: 2015 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_33	Flexible work times/ school hours/ home working	NCC has already implemented this scheme. Most school hours now out with LA control as schools become academies. Legal process still needed for LA schools. SMOTS being refreshed.	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

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_34	Provision of Real Time Information (RTI) at bus stops	Out of NCC control - believe this is underway. Nexus and bus companies developing applications.	Public information and Education: Other mechanisms	Implementation	Start date: 2010 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_35	Target schools and parents with information campaigns	Go Smarter to School AQ bid submitted to DEFRA but unsuccessful	Public information and Education: Other mechanisms	Other	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_36	Health Promotion	To be led by (Primary Care Trust) PCT in liaison with Transport Policy staff. Cycling in the City Active Newcastle/This girl can.	Public information and Education: Other mechanisms	Evaluation	Start date: 2006 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_37	One off events	Eg, Sky Rides, Cycle cross, Make the Switch	Public information and Education: Other mechanisms	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_38	Education regarding safety on Public Transport	LTP3 was committed to improve actual and perceived levels of security through proactive use of more staffing and CCTV. Nexus delivering.	Public information and Education: Other mechanisms	Implementation	Start date: 2010 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_39	Provision of information on ‘High Pollution Days’	Not to be implemented in the short term, but may however be linked to future UTMC systems. Being explored with UTMC.	Traffic planning and management: Other measure	Other	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_40	Include cycle facilities in new developments	This is a standard requirement for a new development. Implemented - requirement of new planning applications	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_41	Consideration of the location of essential services such as housing and employment	Implementation as part of the new accessibility strategy and cross organisational working arrangements. Included in Urban Core Plan.	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_42	Strengthen joint working between local authorities	Ongoing. Also strengthened relationships with Urban Observatory, Newcastle University.	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_43	Implement greater planning controls in AQMAs	Air quality is considered when it is a material issue, and consideration is given to planning controls. Dilution of local planning control has affected the LA's ability to exert pressure.	Other measure: Other measure	Implementation	Start date: 2004 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_44	Local Development Frameworks need to identify AQMAs	Local development framework has taken air quality into account. Background monitoring to support/validate planning application submissions.	Other measure: Other measure	Implementation	Start date: 2004 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_45	Cap existing development sites	Economic redevelopment is essential to the regeneration of the City, and this should only be considered where that development cannot be facilitated	Other measure: Other measure	Implementation	Start date: 2014 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_46	Encourage mixed use developments	This is already part of Newcastle City Council's sustainable development policy	Other measure: Other measure	Implementation	Start date: 2001 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
Newcastle City Council_47	Undertake air quality assessments of relevant new developments	Air quality is considered when it is a material issue, and consideration is given to planning controls. Validation criteria for planning applications.	Other measure: Other measure	Implementation	Start date: 2001 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Newcastle City Council_48	Air Quality Awareness Campaign	Campaign to raise air quality and how behavioural change can both improve personal health and at the same time improve air quality. Be Air Aware time limited project engaged with the community and supported by Go Smarter.	Public information and Education: Other mechanisms	Implementation	Start date: 2014 Expected end date: 2016 Spatial scale: Whole town or city Source affected: Commercial and residential sources Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_1	A188 DfT Pinch Point Scheme	Traffic management	Traffic planning and management: Other measure	Implementation	Start date: 2015 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_2	A1058 Coast Road Local Enterprise Partnership (LEP) Major Scheme	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_3	A19 Employment Access - Cobalt Strategic Enterprise Plan (SEP)	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2019 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_4	Scaffold Hill / West Shiremoor S.278 Works	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_5	A191 Corridor SEP	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_6	A1056 Weetslade Corridor SEP	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_7	Whitehouse Farm S.278 Works	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2016 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
North Tyneside Council_8	Station Road East S.278 Works	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2019 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
North Tyneside Council_9	North Bank of Tyne Access SEP	Traffic management	Traffic planning and management: Other measure	Planning	Start date: 2015 Expected end date: 2019 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_1	Road Improvements	Construction of New Tyne Crossing (road tunnel)	Traffic planning and management: Other measure	Evaluation	Start date: 2007 Expected end date: 2011 Spatial scale: National Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_2	Congestion Measure	Alternative access to trunk road and road tunnel	Traffic planning and management: Other measure	Evaluation	Start date: 2007 Expected end date: 2011 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_3	Major Junction Improvement	Testo's Grade Separation Major Scheme	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: 2015 Expected end date: 2019 Spatial scale: National Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_4	Travel Information	Tyne and Wear UTMC	Traffic planning and management: Other measure	Implementation	Start date: 2008 Expected end date: 2019 Spatial scale: National Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_5	Freight Movements	Tyne and Wear Freight Quality Partnership	Traffic planning and management: Freight transport measure	Evaluation	Start date: 2007 Expected end date: 2019 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_6	Major Scheme Improvement	Lindisfarne AQMA Major Junction Improvement Scheme	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: 2015 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
South Tyneside Metropolitan Borough Council_7	Traffic Management	Travel Planning within A19 Corridor	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2014 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_8	Highway Asset Management Plan	Formulation of Council Wide Strategy	Other measure: Other measure	Implementation	Start date: 2007 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_9	Network Management Plan	Route Based Strategies to prevent congestion	Other measure: Other measure	Implementation	Start date: 2007 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_10	Go Smarter to School	Sustainable Transport Improvements to encourage the use of sustainable transport	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2011 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_11	Park and Ride at Metro Stations	Car Parking arrangements provided at Metro Stations to reduce congestion	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2005 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_12	Better Bus Networks	Arrangements with Public Transport providers to improve network	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2007 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_13	Tyne Pedestrian Tunnel	Refurbishment of existing tunnel	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2007 Expected end date: 2017 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_14	Electrical Vehicles	Implementation of Electrical Charging Infrastructure	Traffic planning and management: Differentiation of parking fees	Implementation	Start date: 2014 Expected end date: 2018 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
South Tyneside Metropolitan Borough Council_15	Improving Cycling	Strategic Cycling Routes throughout the borough	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_16	Improving Cycling	Free Cycling Maps through the Tyne and Wear Region	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_17	Cycle Hire	Seasonal Cycle Hire offered at the South Shields Foreshore Area	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_18	Public Information	Working with Nexus to disseminate public transport information	Public information and Education: Internet	Implementation	Start date: 2007 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_19	Nexus	Improving the Metro System	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_20	South Shields 365	Public Transport and Highway Movements to improve the Town Centre	Traffic planning and management: Reduction of speed limits and control	Implementation	Start date: 2005 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
South Tyneside Metropolitan Borough Council_21	Improved traffic control and signalling at major junction	Boldon Lane AQMA	Traffic planning and management: Other measure	Implementation	Start date: 2012 Expected end date: 2012 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_1	Urban Transport Management and Control (UTMC)	Congestion	Traffic planning and management: Other measure	Implementation	Start date: 2011 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A

Measure code	Description	Focus	Classification	Status	Other information
Sunderland City Council_2	EV infrastructure	Promoting low carbon vehicles	Public procurement: Other measure	Implementation	Start date: 2010 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_3	Priority Lanes	Promote use of sustainable modes	Traffic planning and management: Improvement of public transport	Implementation	Start date: 2008 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_4	Traffic management schemes	N/A	Traffic planning and management: Reduction of speed limits and control	Implementation	Start date: 2001 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_5	Cycling	Promote use of sustainable modes	Traffic planning and management: Encouragement of shift of transport modes	Implementation	Start date: 2005 Expected end date: 2020 Spatial scale: Whole agglomeration Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_6	Retrofit buses	Reduce Bus fleet NOx and particulate emissions	Public procurement: Cleaner vehicle transport services	Implementation	Start date: 2013 Expected end date: 2015 Spatial scale: Local Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_7	Low Carbon Energy Assessment (LCEA)	Promote low carbon economy	Public procurement: New vehicles, including low emission vehicles	Planning	Start date: 2011 Expected end date: 2020 Spatial scale: National Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_8	Ultra Low carbon vehicle city strategy	Promote low carbon technology	Public procurement: Cleaner vehicle transport services	Preparation	Start date: 2014 Expected end date: 2020 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A
Sunderland City Council_9	Sunderland Strategic Transport Corridor (SSTC)	Improve connectivity	Traffic planning and management: Other measure	Planning	Start date: 2012 Expected end date: 2030 Spatial scale: Whole town or city Source affected: Transport Indicator: N/A Target emissions reduction: N/A