Department for Environment, Food and Rural Affairs

Re-Notification of the Air Quality Plan to meet the Annual Mean NO_2 Limit Value in the Birkenhead Agglomeration, UK (UK0020)

Summary

Updated monitoring and modelling data underpinning the latest UK projections show that the current and planned measures set out in the existing Air Quality Plan for the Birkenhead Agglomeration (UK0020) will achieve compliance with the annual mean limit value for nitrogen dioxide (NO_2) by 1 January 2015. We would ask that the Commission assess the new evidence presented in this Re-Notification and the accompanying Time Extension Notification (TEN) Forms[1] for the Birkenhead Agglomeration under Article 22 of the Ambient Air Quality Directive (2008/50/EC) and confirm that the conditions of a time extension until January 2015 have been met.

Introduction

In September 2011, the UK Government submitted to the European Commission an Air Quality Plan for the Birkenhead Agglomeration (UK0020) setting out the measures in place or being planned to deliver compliance with the annual mean limit value for NO_2 (40 µg/m^3). A case for postponement of the compliance deadline to 2015 was made, in accordance with Article 22 of the Ambient Air Quality Directive (2008/50/EC). The Plan projected that, as a result of current and planned measures, NO_2 concentrations would reduce from 37 µg/m^3 in 2010 to 27 µg/m^3 by 2015 therefore achieving compliance with the annual limit value.

In June 2012, Commission Decision C(2012)4155[2] was published, which set out the Commission's conclusions on the UK Air Quality Plans that were submitted in September 2011. The Decision raised objections to the postponement of the deadline for attaining the annual limit value for NO_2 in the Birkenhead Agglomeration having considered that:

The United Kingdom authorities have provided projections which show compliance with the annual NO_2 limit value already in 2010. The official annual air quality report for 2010 provided by the United Kingdom however lists those zones as in exceedence of the annual NO_2 limit value. As the exceedence is a modelled

[1] The revised TEN Forms for the Birkenhead Zone are available here: http://uk-air.defra.gov.uk/library/no2ten/index. Only Forms that have been revised should be considered.
[2] http://ec.europa.eu/environment/air/quality/legislation/pdf/uk2_no2_en.pdf.

exceedence, no indication is given about the proportion of exceedence in 2010. Considering the discrepancy between the projected 2010 NO_2 annual concentration levels and the information provided in the annual air quality report on 2010 and the lack of explanation thereof, the Commission finds that it cannot fully assess whether a postponement is needed and if yes whether the proposed abatement action is sufficient for achieving compliance with the annual limit value for NO_2 by 1 January 2015 and if it could be achieved earlier.

This Re-Notification responds to Commission Decision C(2012)4155 following a review by UK authorities of the latest compliance evidence, using more recent NO_2 concentration data and projections than those included in the existing Plan submitted in September 2011. This Re-Notification should be considered as an addendum to the existing Plan, which is available online[3].

Review of the latest compliance evidence

For the September 2011 Plan, 2008 was used as the reference year. In this re-notification, the UK authorities used 2010 concentration data as the reference year. Table 1 presents the measured annual mean concentrations at national network monitoring stations in this zone, including the data recently submitted as part of the 2011 compliance assessment. Since 2007, there have been no measured exceedences in this zone. Table 2 presents the modelled annual mean NO_2 results in this zone. There were no modelled background exceedances of the limit value in 2010 or in any recent other year.

Table 1: Measured annual mean NO_2 concentrations at national network stations in the Birkenhead Agglomeration, μgm^{-3}. (Data capture shown in brackets)

Zone code	Agglomeration name	Site	2007	2008	2009	2010	2011
UK0020	Birkenhead Urban Area	Wirral Tranmere (GB0730A)	19 (97%)	19 (98%)	19 (94%)	31 (94%)	33 (96%)

[3] http://uk-air.defra.gov.uk/library/no2ten/documents/UK0020.pdf

Table 2: Annual mean NO_2 model results for the Birkenhead Agglomeration.

	Assessment Data				
	2007	**2008**	**2009**	**2010**	**2011**
Road length exceeding (km)	16.1	11.4	11.0	14.8	6.0
Background area exceeding (km^2)	0.0	0.0	0.0	0.0	0.0
Maximum modelled concentration ($\mu g/m^3$)	49	44	61	52	48

1. The location of the maximum modelled concentration for 2010 is road link M53, location 341550, 375075.
2. The data for 2010 are not those from the 2010 compliance assessment as the emissions factors have been updated after this was reported and the results recalculated.

Maps showing the modelled annual mean NO_2 concentrations for 2010 at background and at roadside locations are presented in Figures 1 and 2 respectively.

Figure 1: Map of modelled background annual mean NO_2 concentrations 2010.

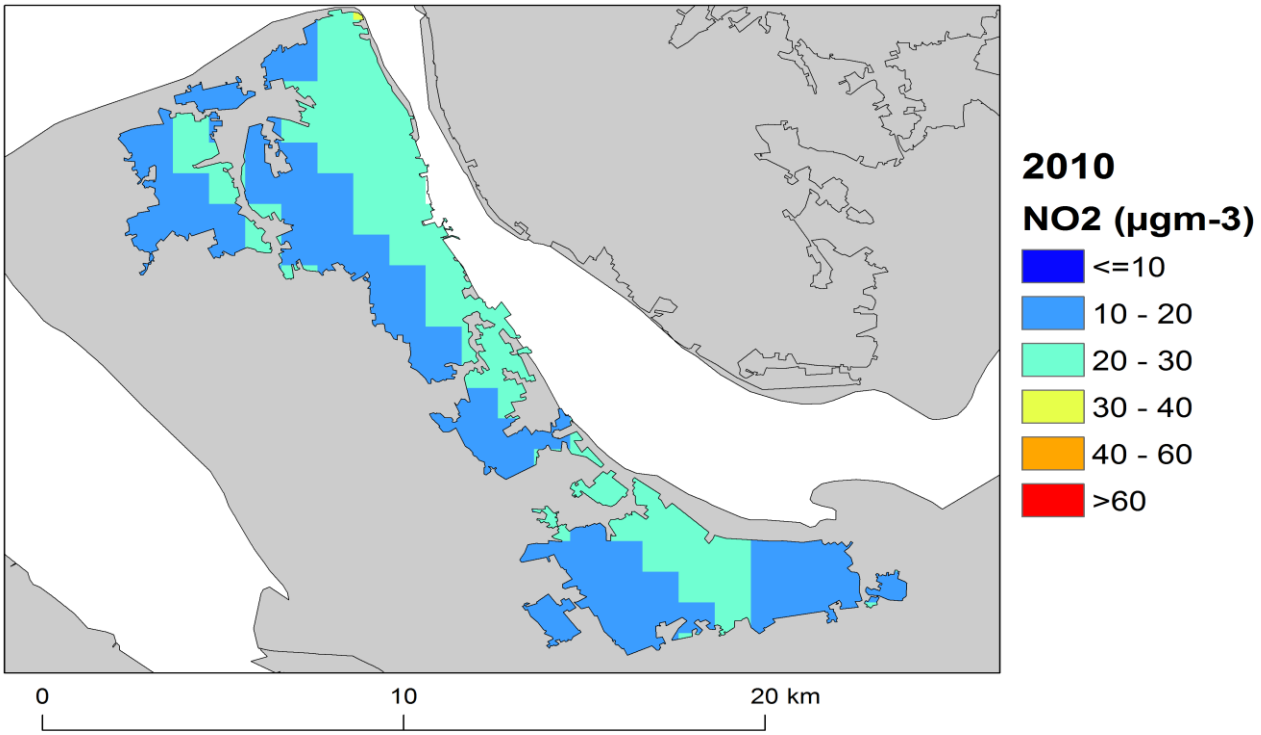
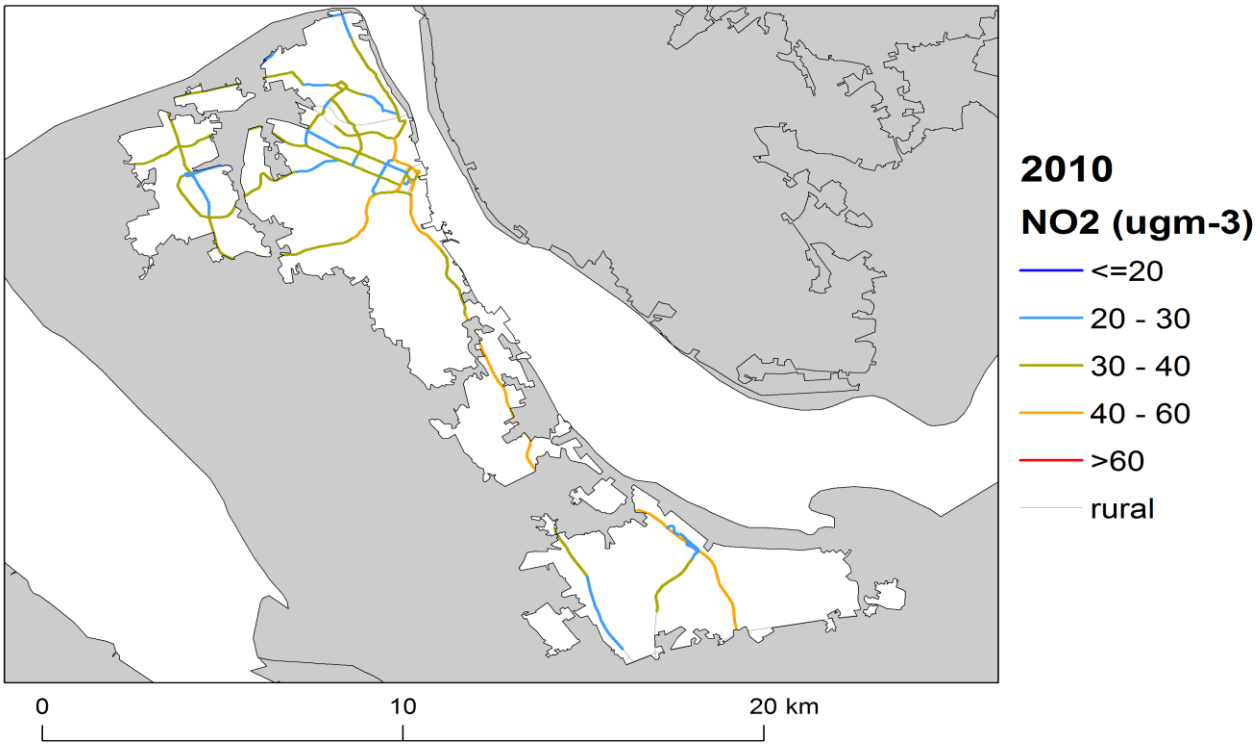


Figure 2: Map of modelled roadside annual mean NO_2 concentrations 2010.



Baseline model projections

The modelling and projections that were used to underpin the Plan for the Birkenhead Agglomeration submitted in September 2011 have been significantly updated in 2012 and now show a more realistic assessment of future NO_2 concentrations. It is on this basis that this Re-Notification is made.

As foreshadowed in the UK Overview Document submitted in September 2011, the UK authorities have incorporated the latest COPERT vehicle emission factors (version 4.8) and updated fleet data based on ANPR (Automatic Number Plate Recognition) technology into the latest projections. Both of these changes are an improvement on the previous projections, notably the COPERT emission factors as they are based on real world emissions.

The overall (UK) impact of the new emission factors and updated fleet data is that the new projections generally predict concentrations decreasing more slowly into the future than the previous projections. However, the impact varies between locations according to the fleet mix on the individual road. In this zone the predicted rate of decline in NO_2 concentration at the location with the highest modelled concentration is predicted to be similar to the previous projections. These previous projections also predicted a decline between 2008 and 2010 but this did not happen as a result of combination of a lack of decline in real world emissions of NO_x from road traffic sources and the unusual weather conditions in 2010.

The trend in maximum modelled annual mean NO_2 concentration in this zone presented in Table 2 is complex. It is the result of several zone specific reasons in addition to the overall tends in emission and ambient concentrations across the UK. The maximum modelled concentration in 2009 was higher than the value in 2008 because of the inclusion of an additional stretch of the M53 motorway in the assessment. This road was not classified as urban in the 2008 reference year. The reduction from 2009 to 2010 was the result of incorporating the updated emission factors and fleet data. The updated fleet data showed that the heavy goods vehicles travelling on motorways were newer than previously assumed and this had a large impact on the emission inventory for motorways.

We now know that NO_X emissions and ambient concentrations in 2010 were significantly influenced by extreme cold weather spells at the start and end of the year and that in 2011, emissions and concentrations returned to the overall trend. Monitoring data from across the UK's compliance monitoring network have been compared for the years 2008, 2009, 2010 and 2011 by calculating the mean concentration for each station type for stations that have at least 75% data capture in all of these years. It is clear that concentrations in 2010 were higher on average than in other recent years for both NO_X and NO_2. Therefore a scaling factor (0.94) has been calculated from the difference between the measured NO_2 concentration in 2010 and the values interpolated between 2009 and 2011. Projections have been calculated with and without this scaling factor. The projections with the scaling factor are presented here as a sensitivity test to estimate projected concentrations for future years with the influence of the unusual weather in 2010 on emissions and ambient concentrations removed.

In the Birkenhead Agglomeration, this updated evidence shows that compliance will be achieved by 1 January 2015. The new baseline projections for 2015 are shown in Table 3.

Table 3: Annual mean NO_2 modelled baseline projections for 2015 for the Birkenhead Agglomeration.

	Baseline Projections	**Baseline projections with scaling factor applied[3]**
	Year 2015	Year 2015
Road length exceeding (km)	0.0	0.0
Background area exceeding (km^2)	0.0	0.0
Maximum modelled concentration ($\mu g/m^3$)	39	37

3. The projections with the scaling factor are presented here as a sensitivity test to remove the influence of the unusual weather conditions in 2010, the reference year.

Measures Implementation

As demonstrated by the reduction in annual mean NO_2 concentrations and road length exceeding the annual mean NO_2 limit, the existing measures set out in the Plan for the Birkenhead Agglomeration submitted in September 2011 are reducing NO_2 concentrations and will deliver compliance by 1 January 2015.

Many of the measures are based on strategies which aim to encourage modal shift in transport. Measures such as encouraging the use of cleaner fuels and vehicles, increasing awareness of air pollution, installing intelligent transport systems, reducing congestion and encouraging walking are included in the Plan. It should also be noted that local authority action plans have a role to play in improving local air quality though small scale measures are very difficult to quantify and include in the new projections.

Conclusion

The updated evidence presented in this document shows that compliance with the annual mean NO_2 limit in the Birkenhead Agglomeration is expected by 1 January 2015. As such, we would ask that the Commission assess this Re-Notification in accordance with the provisions set out in Article 22 of Directive 2008/50/EC with a view to confirming that the conditions for a time extension until 1 January 2015 have been met.

December 2012