



East Lothian Council

Air Quality Detailed Assessment for Musselburgh

Report for East Lothian Council

Restricted Commercial

AEAT/ENV/R/3281

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Executive summary

This report is a dispersion modelling based Detailed Assessment which investigates the magnitude and spatial extent of potential exceedences of the nitrogen dioxide (NO₂) annual mean objective of 40 µg m⁻³ during 2011 on the following roads in Musselburgh:

- High Street (A199)
- Bridge Street (A199)
- North High Street (A199)

East Lothian Council currently monitors NO₂ using passive diffusion tubes at 8 locations in Musselburgh. Automatic monitoring is currently carried out at one location. No exceedences of the annual mean NO₂ objective of greater than 40 µg m⁻³ were measured any site. However, concentrations close to the annual mean objective were measured at 147 and 183 High St, with measured annual average NO₂ concentrations of 40 µg m⁻³ and 36 µg m⁻³ respectively. It was also concluded that the hourly average NO₂ objective of 200 µg m⁻³ not to be exceeded more than 18 times a year is unlikely to have been exceeded during 2011.

Daily traffic flow data and traffic compositions have been derived from the Department of Transport (DfT) traffic counts and local traffic counts, both carried out during 2010. The Trip End Model Presentation Program and NRTF growth factors have been used to calculate the traffic growth factors for Musselburgh between 2010 and 2011 to estimate traffic flow during 2011. Speed data and queue data were not available for the study area. As a result professional judgement has been used to estimate traffic speeds with slower speeds being used as appropriate to reflect congestion/speed around junctions.

East Lothian Council are currently introducing a system of Urban Traffic Control in Musselburgh using the SCOOT (Split Cycle Offset Optimisation Technique) system which monitors queue lengths at all junctions on the main arterial routes and alters signal timing to reduced congestion.

East Lothian Council Transportation Department are also looking into current locations of bus stops as these may be causing localised elevated NO₂ concentrations with a view to amending current bus-stop locations and road layout to reduce queuing at current locations prior to any declaration of an AQMA.

The study indicates that exceedences of the nitrogen dioxide annual mean objective of 40 µg m⁻³ may have occurred in the vicinity of specified residential receptors in two areas of Musselburgh:

- **High St**, with the highest annual mean concentration predicted at relevant receptors **R1, R5, R24, R25**, with a predicted concentration of 41 µg m⁻³.
- **Bridge Street**, with the highest annual mean concentration predicted at relevant receptors **R46, R47 and R48**, with a predicted concentrations of 40 µg m⁻³, 46 µg m⁻³ and 47 µg m⁻³, respectively.

It has been noted that the highest annual average NO₂ concentrations were predicted receptors located close to bus stops and that the majority of the predicted annual mean exceedences are marginal. An element of uncertainty has been introduced to the model as a result of estimating emissions from both queuing traffic and stationary buses. It may therefore be appropriate to carry out monitoring of NO₂ at a representative sample of exceeding receptors to confirm the results of this modelling assessment. This would greatly enhance the reliability of the forthcoming Further Assessment and allow better delineation of any required AQMA boundary.

As a result of the abovementioned conclusion East Lothian Council started monitoring NO₂ concentrations at 5 new locations on 3rd May 2012; using diffusion tubes. These new monitoring sites are located at receptors R1, R5, R13, R24 and R47, where dispersion modelling indicates that exceedences of the NO₂ annual mean objective had occurred during 2011.

Therefore, in light of this Detailed Assessment and following discussion with the Council it is recommended that East Lothian Council should consider the following:

1. The declaration of an AQMA(s) for the NO₂ annual mean objective after May 2013 if monitoring results obtained from locations R1, R5, R13, R24 and R47, in addition to the existing monitoring locations, confirms the modelling results that the NO₂ annual mean objective has been exceeded.
2. The installation of an additional automatic monitoring site at a location on the High St, if practicable. This would provide more accurate monitoring data for use in future modelling studies, if required, and also enable particulate matter (PM₁₀) concentrations in the area of the High Street to be assessed.
3. The implementation of further local traffic surveys in order to better characterise traffic flows and fleet compositions in the area.