

Appendix E.4: Background and Model Verification

Background Adjustment Factor

Reading New Town AURN 2017 NO₂ data was used to adjust the Defra background concentrations.

2017 Reading New Town AURN data capture and factors.

2016	Data Capture	Measured Background AURN (µg/m ³)	Defra background (µg/m ³)	Factor
NO ₂	99%	28.7	23.0	1.25
PM ₁₀	96%	12.0	15.1	0.79
PM _{2.5}	94%	9.7	9.5	1.01

Verification - Nitrogen Dioxide

Most nitrogen dioxide is produced in the atmosphere by the reaction of nitric oxide (NO) with ozone. It is therefore most appropriate to verify the model in terms of primary pollutant emission of nitrogen oxides (NO_x = NO + NO₂). The model has been run to predict the 2016 annual mean road-NO_x contribution at 162 London Road, modelled at 2 m height (identified in **Table 10.9**).

The model output of road-NO_x has been compared with the 'measured' road-NO_x, which was calculated from the measured NO₂ concentrations and the adjusted background NO₂ concentrations within the NO_x from NO₂ calculator.

An adjustment factor was determined comparing the 'measured' road contribution and the model derived road contribution. This factor was then applied to the modelled road-NO_x concentration for each receptor to provide adjusted modelled road-NO_x concentrations. The total NO₂ concentrations were then determined by combining the adjusted modelled road-NO_x concentrations with the predicted background NO₂ concentration within the NO_x from NO₂ calculator.

The following adjustment factors have been applied to all modelled NO_x data:

Adjustment factor: 1.319

The results imply that overall, the model was under-predicting the road-NO_x contribution. This is a common experience with this and most other models. The final NO₂ adjustment is minor.

Particles (PM₁₀ and PM_{2.5}) Verification Factor

The 2016 baseline traffic did not include all the roads required to model the location where local monitoring of PM₁₀ and PM_{2.5} is undertaken, therefore it has not been possible to separately verify the model for PM₁₀ or PM_{2.5}. The model outputs of road-PM₁₀ and PM_{2.5} have been adjusted by applying the adjustment factor calculated for road-NO_x.