

APPENDIX 11.2

11.1

11.2 Impact Descriptors and Assessment of Significance

11.2.1 There is no official guidance in the UK on how to describe the nature of air quality impacts, nor how to assess their significance. The approach developed by the Institute of Air Quality Management¹ (Ref 11.16), and incorporated in Environmental Protection UK's guidance document on planning and air quality (Ref 11.17), has therefore been used. This involves three distinct stages: the application of descriptors for magnitude of change; the description of the impact at each sensitive receptor; and then the assessment of overall significance of the scheme.

Impact Descriptors

11.2.2 The definition of impact magnitude is solely related to the degree of change in pollutant concentrations, expressed in microgrammes per cubic metre, but originally determined as a percentage of the air quality objective. Impact description takes account of the impact magnitude and of the absolute concentrations and how they relate to the air quality objectives or other relevant standards. The descriptors for the magnitude of change due to the scheme are set out Table A11.2.1 while Table A11.2.2 sets out the impact descriptors. These tables have been designed to assist with describing air quality impacts at each specific receptor. They apply to the pollutants relevant to this scheme and the objectives against which they are being assessed.

¹ The IAQM is the professional body for air quality practitioners in the UK.

Table A11.2.1: Definition of Impact Magnitude for Changes in Ambient Pollutant Concentrations

Magnitude of Change	Annual Mean NO ₂ /PM ₁₀	No. days with PM ₁₀ concentration greater than 50 µg/m ³	Annual Mean PM _{2.5}
Large	Increase/decrease ≥4 µg/m ³	Increase/decrease >4 days	Increase/decrease ≥2.5 µg/m ³
Medium	Increase/decrease 2 - <4 µg/m ³	Increase/decrease 3 or 4 days	Increase/decrease 1.25 - <2.5 µg/m ³
Small	Increase/decrease 0.4 - <2 µg/m ³	Increase/decrease 1 or 2 days	Increase/decrease 0.25 - <1.25 µg/m ³
Imperceptible	Increase/decrease <0.4 µg/m ³	Increase/decrease <1 day	Increase/decrease <0.25 µg/m ³

Table A11.2.2: Air Quality Impact Descriptors for Changes to Annual Mean Nitrogen Dioxide, PM₁₀ and PM_{2.5} Concentrations and Changes to Number of Days with PM₁₀ Concentration Greater than 50 µg/m³ at a Receptor^a

Absolute Concentration ^b in Relation to Objective/Limit Value	Change in Concentration/day ^c		
	Small	Medium	Large
Above Objective/Limit Value ^d	Slight	Moderate	Substantial
Just Below Objective/Limit Value ^e	Slight	Moderate	Moderate
Below Objective/Limit Value ^f	Negligible	Slight	Slight
Well Below Objective/Limit Value ^g	Negligible	Negligible	Slight

^a Criteria have been adapted from the published criteria to remove overlaps at transitions.

^b The 'Absolute Concentration' relates to the 'With-Scheme' air quality where there is an increase in concentrations and to the 'Without-Scheme' air quality where there is a decrease in concentrations.

^c Where the Impact Magnitude is *Imperceptible*, then the Impact Description is *Negligible*.

^d Where the Impact Magnitude is *Imperceptible*, then the Impact Description is *Negligible*.

^d 'Above': >40 µg/m³ annual mean NO₂ or PM₁₀, >25 µg/m³ annual mean PM_{2.5}, or >35 days with PM₁₀ > 50 µg/m³.

^e 'Just below': >36 – ≤40 µg/m³ of annual mean NO₂ or PM₁₀, >22.5 – ≤25 µg/m³ annual mean PM_{2.5}, or >32 – ≤35 days with PM₁₀ >50 µg/m³.

^f 'Below': >30 – ≤36 µg/m³ of annual mean NO₂ or PM₁₀, >18.75 – ≤22.5 µg/m³ annual mean PM_{2.5}, or >26 – ≤32 days with PM₁₀ >50 µg/m³.

^g 'Well below': ≤30 µg/m³ annual mean NO₂ or PM₁₀, ≤18.75 µg/m³ annual mean PM_{2.5}, or ≤26 days with PM₁₀ >50 µg/m³.

Assessment of Significance

11.2.3 The IAQM guidance (Ref 11.16) is that the assessment of significance should be based on professional judgement, with the overall air quality impact of the scheme described as

either, insignificant, minor, moderate or major. In drawing these conclusions, the factors set out in Table A11.2.3 should be taken into account. A summary of the professional experience of staff contributing to this assessment is provided in Appendix 11.3.

Table A11.2.3: Factors Taken into Account in Determining Air Quality Significance

Factors
Number of people affected by increases and/or decreases in concentrations and a judgement on the overall balance.
The number of people exposed to levels above the objective or limit value, where new exposure is being introduced.
The magnitude of the changes and the descriptions of the impacts at the receptors using the criteria set out in Table A11.2.1 and Table A11.2.2.
Whether or not an exceedence of an objective or limit value is predicted to arise in the study area where none existed before or an exceedence area is substantially increased.
Whether or not the study area exceeds an objective or limit value and this exceedence is removed or the exceedence area is reduced.
Uncertainty, including the extent to which worst-case assumptions have been made
The extent to which an objective or limit value is exceeded, e.g. an annual mean NO ₂ of 41 µg/m ³ should attract less significance than an annual mean of 51 µg/m ³