

A30 Chiverton to Carland Cross Environmental Statement

**Volume 6 Document Ref 6.4 ES Appendix 5.2
Air quality- operational assessment
methodology**

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Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009 (as amended)
APFP Regulation 5(2)(a)

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5 Appendix 5.2

5.2 Operational Assessment Methodology

Introduction

5.2.1 This section includes details used in the operational assessment for air quality.

Dispersion model and set up

5.2.2 The ADMS-Roads model (version 4.1.1) developed by Cambridge Environmental Research Consultants Ltd (CERC) has been used for this assessment. ADMS-Roads is a detailed atmospheric dispersion model, which focuses on road traffic as a source of pollutant emissions.

5.2.3 The model takes into account emissions from light and heavy duty vehicles, travelling at specified speeds along a road 'link' over a period of one hour, and predicts the dispersion of these emissions using appropriate historical meteorological data.

Traffic emissions

5.2.4 Traffic data has been provided for the air quality assessment by the Arup transport team. Emissions from traffic data were calculated using the emission factors provided in the latest version (version 3) of IAN 185/15.

Minimum Monin-Obukhov length and surface roughness

5.2.5 The minimum Monin-Obukhov length describes the minimum stability of the atmosphere. For this model, a length of 10m was used representing "small towns".

5.2.6 The amount of mechanical turbulence (and hence, mixing) in the atmosphere is affected by the surface/ground over which the air is passing. Typical surface roughness values range from 1.5m (for cities, forests and industrial areas) to 0.0001m (for water or sandy deserts). In this assessment, a surface roughness of 0.5m was used.

Meteorological data

- 5.2.7 Meteorological data for one year (2016) from the Camborne meteorological monitoring station was used in the dispersion modelling. The Camborne meteorological monitoring station is located 7km east of the scheme.
- 5.2.8 Most dispersion models of roads do not use meteorological data if they relate to calm winds conditions, as dispersion of air pollutants is more difficult to calculate in these circumstances. ADMS-Roads treats calm wind conditions by setting the minimum wind speed to 0.75m/s. LAQM.TG(16) guidance states that the meteorological data file is tested in a dispersion model and the relevant output log file checked to confirm the number of missing hours and calm hours that cannot be used by the dispersion model. This is important when considering predictions of high percentiles and the number of exceedances. The guidance recommends that meteorological data should only be used if the percentage of usable hours is greater than 75% and preferably greater than 90%.
- 5.2.9 The meteorological data selected from Camborne includes greater than 95% of usable data. This is above the 90% threshold and this data therefore meets the requirement of the Defra guidance.
- 5.2.10 The wind rose 2016 at Camborne is provided in Figure 5-1. The wind roses indicate predominant westerly and south-westerly wind directions.

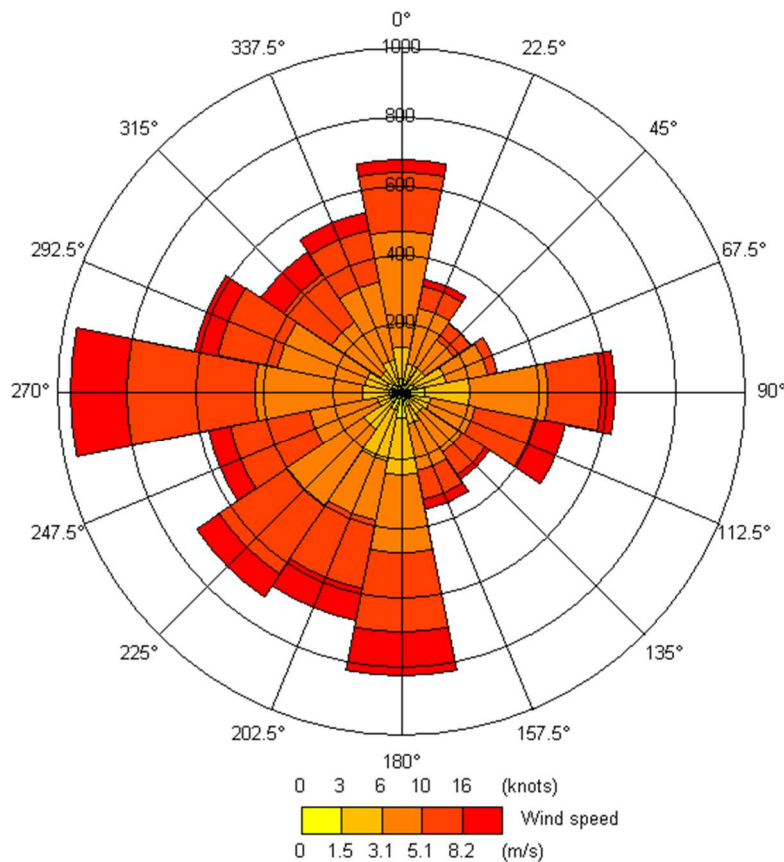


Figure 5-1 Wind rose for Camborne for 2016

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