

Local air quality

Local air quality issues are becoming more of a concern and are often cited as the limiting factor in the growth of airports.

Local Air Quality close to airports

Unlike noise, which is usually dominated by aircraft operations around busy airports, there are a number of sources of emissions, and the contribution of each individual source to local air quality, is often not well known, or understood.

Of principle concern around airports are the concentrations of nitrogen dioxide (NO₂) - one of the components of NO_x; and particulates, especially those with mean aerodynamic diameters less than 10 µm (PM₁₀), and less than 2.5 µm (PM_{2.5}), the maximum concentrations of which are regulated by EU Directive and UK law. In this respect, the combustion of kerosene by aircraft engines is extremely efficient, and results predominantly in the emission of carbon dioxide and water, plus trace amounts of other gasses and particles, and although aircraft have a contribution to local air quality, road vehicles – especially Diesel powered ones, are a significant source of these emissions.

Modelling Air Quality

Unlike noise, where microphones can measure discrete noise events such as aircraft departures, this is not possible with continuous emissions monitoring as all NO_x emissions are essentially identical, regardless of where they are generated. As a result modelling has been widely used to try to identify the contributions from different sources, instead.

British Airways is involved in a number of initiatives to help improve the understanding of aircraft emissions and the way they are modelled. We were involved with the Project for the Sustainable Development of Heathrow (PSDH) set up by the UK Dft and are also helping the International Civil Aviation Organisation (ICAO) to write guidance for the modelling of aircraft emissions for local air quality assessments. British Airways has also carried out its own modelling exercise, using a conservative evaluation of recorded information about aircraft operations, power levels and times, and other aspects of aircraft operations such as ground running of engines and Auxiliary Power Unit (APU) emissions. Results from our modelling suggested that less than half of the NO₂ emissions at areas outside the airport, where aircraft had the greatest effect, were actually due to aircraft.

- More information on BA research for PSDH (link to technical reports – pdf.)

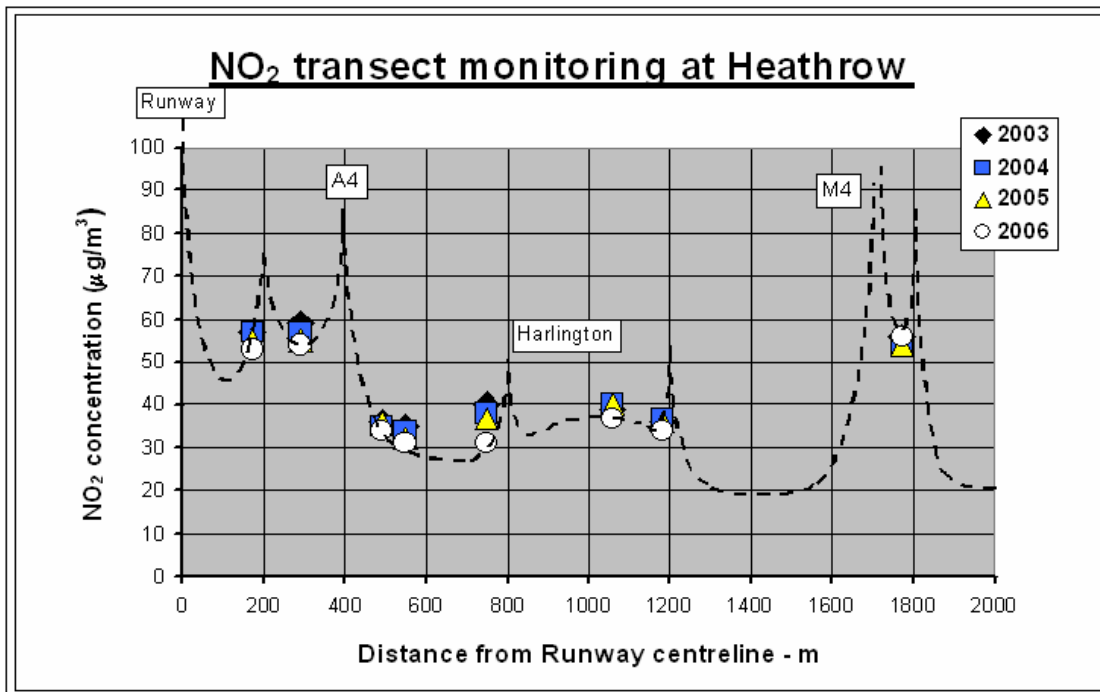
To substantiate findings and provide data for verifying the modelling work, we have commissioned Netcen to carry out measurements using diffusion tubes along a transect from the airport up to the M4 motorway, approximately 1.9 km north of the airport. After three whole years of monitoring, the results appear to suggest that there is a rapid reduction in NO₂ concentrations away from the airport boundary, to the north, in line with our earlier modelling study.



Diffusion tube monitors at Terminal 4

We have shared the results of our monitoring with a number of other interested groups, and along with monitored levels carried out by a number of bodies concentrated around Heathrow airport, have made them publicly available on the 'Heathrowairwatch' website. This is the initiative of a body comprising the four Local Authorities around Heathrow airport, the airport operator, BAA Heathrow, and British Airways.

- More information on Heathrowairwatch



Measured NO₂ levels