

Micro-Climate

The Airshed conducted an air quality and micro-climate study for a proposed new building in a Local Air Quality Management Area adjacent to a busy urban motorway. The new development consisted of two towers up to 58m above ground level with a landscaped street between them. The local authority required an air quality and micro-climate study as part of the planning process.

Air quality impacts were predicted using a conventional advanced dispersion model (ADMS) and computational fluid dynamics (CFD). The CFD model was used to examine how pollution from the adjacent motorway would be affected by the new buildings.

This indicated that 2010 future residents would not be exposed to PM₁₀ or NO₂ above Air Quality Objectives and that the new building would not exacerbate pollution at existing receptors.

The study also examined the effect of the new building on local wind speeds, looking at the impacts on existing pedestrians and those using the new building. The local micro-climate was assessed for pedestrian safety and comfort.

The study predicted baseline and future wind speeds using CFD. The assessment found that while the effects on existing buildings would be minimal, wind speeds between the new towers would be unacceptable for pedestrian comfort and safety in some conditions.

The initial landscaping scheme proposed by the project architects featured a long open vista along the full length of the street. Acceptable wind speeds would not be achieved between the two towers by this landscaping scheme as it would allow unobstructed flow down the full length of the street.

Three landscape design options within the street were tested. This confirmed that major landscaping measures would be required between the new towers to reduce near-ground wind speeds within the street to acceptable levels .

The study concluded that physical breaks to reduce the wind fetch along the street were necessary and the scheme was amended to include these features.

