

Odour from Fast Food

The Airshed was appointed by the project architect to advise on a new scheme proposing mixed residential and commercial uses, including two fast food restaurants. The local planning authority required an odour impact assessment for the restaurants to protect local amenity. The Airshed was able to advise, at an early stage in the design process, that the restaurant cooking odours should be discharged from roof vents above ridge level, designed to look like traditional chimneys.

Two atmospheric dispersion models were used to predict odour from the new operations and to help inform the design. A conventional dispersion model (ADMS 4.0.3) was used to consider the optimal conditions for the exhaust of cooking fumes. The results from this model indicated that the new flats to the north-east of the proposed restaurants would be exposed to the highest odour concentrations.

The model considered a range of stack heights and efflux velocities. This indicated that the optimum conditions for release were for flues terminating 1.5m above ridge level, with an minimum efflux velocity.

A more complex dispersion model (ANSYS 11.0) which uses computational fluid dynamics (CFD) was also used to predict the odour at the proposed adjacent flats. The CFD model allows the actual shape of proposed buildings to be considered (i.e. as opposed to the simple cuboid shapes possible using less complex models).

This analysis also demonstrated that poor dispersion could be avoided by increasing efflux velocity and ensuring the stack was at least 1m above ridge level.

The requirements for odour mitigation at source also depend on the proposed style of cooking. The Airshed advised on best practice for primary filtration (grease traps), secondary treatment (fine filtration to remove grease, smoke and fume) and tertiary treatment (carbon filtration).

The application was granted permission subject to The Airshed's recommended condition that the applicant submit details of the proposed ventilation extraction and odour abatement systems and the maintenance schedules.

