

Underground Garage

The Airshed was appointed by CALA Homes to assess the air quality impacts from vehicle exhaust emissions within a proposed underground car park at a new build development at The Crescent, Donaldson's, Edinburgh. The main concern was the impact from the air discharged from the car park ventilation system affecting future residents.

The main pollutants of concern were oxides of nitrogen (NO_x) and fine particles (PM_{10} and $\text{PM}_{2.5}$). The predictions were conducted using a CFD (computational fluid dynamics) model. The predictions assumed that 84 vehicles (the capacity of the garage) either entered or left the car park in one hour, as a worst case assessment.

Air quality impacts were compared to statutory EC annual mean Limit Values and Scottish Government Air Quality Objectives. Short-term impacts were assessed using the Environment Agency's assessment framework (H1). Annual mean impacts were assessed using the professional Guidance framework published by the Institute of Air Quality Management (IAQM) and Environment Protection UK (EPUK).

The model predicted significant areas of relatively stagnant flow and poor mixing and highlighted areas where the ventilation system had 'cold spots' i.e. where the ventilation rate was significantly reduced.

The predicted levels of NO_2 and particles (as PM_{10} and $\text{PM}_{2.5}$) were of negligible significance and well within all statutory and legislative guidelines. This conclusion applied both to exposure within residential units and to adjacent outdoor living areas.

