Kelman, I. and R. Spence. 2003. “A Flood Failure Flowchart for Buildings”. Proceedings of the Institution of Civil Engineers—Municipal Engineer, vol. 156, issue ME3, pp. 207-214.

Paper abstract:

This paper identifies the main pathways by which flood-induced pressure differentials may damage residential properties in England. The process looks beyond slow-rise floods and subsequent damage from water contact in order to consider pressures induced by depth differentials, velocity and waves. A Flood Failure Flowchart is presented which provides first-order insight into the main failure modes which should be quantified in detail. Uncertainties remain due to lack of information and weaknesses in the analysis, particularly the reliance on British Standards which are not currently adequate for designing to mitigate all forms of flood damage. British Standards, possibly in the form of a rating system with guidelines, could nonetheless provide an appropriate mechanism for formalising the vulnerabilities which residential buildings experience from flood pressures. The lack of literature in this area suggests that prior recommendations on flood damage reduction did not necessarily have a strong basis overall because they were bounded to exclude flood-induced pressures. This paper is thus only a first step towards systematically identifying and categorising potential failure modes of residences during floods.