

Dissolution subsidence affords some of the most difficult ground conditions with which engineering geologists have to deal. Within the UK, areas underlain by gypsiferous Permo-Triassic strata, most notably around Ripon in Yorkshire, are prone to dissolution structures and resultant building failures are well documented. Conventional drilling of such unstable sites is often a 'hit and miss' affair and most geophysical techniques do not provide sufficient resolution to offer adequate confidence in the results. Proposals for the redevelopment of a site within the urban area at Ripon could not rely on such frequently inconclusive methods and it was necessary to implement a phased approach to site investigation. Following a desk study, high-resolution microgravity geophysics was carried out both inside and outside the existing building. This indicated a major negative anomaly of peak amplitude $-74 \mu\text{Gal}$. Subsequent static core probing, rotary drilling and trial trenching confirmed the existence of a potentially unstable breccia pipe which could therefore be taken into account in the engineering design.