# CRACKING UP?!

## INTRODUCING MARK DOYLE...

**Mark is a Chartered Engineer who moved into property full time following a serious rugby injury in 1996. Landlords and investors since 1991, he and his wife Claire have well over 20 years of experience in buy-to-lets (BTL's), Houses in Multiple Occupation (HMO's), developments and conversions into flats and houses. They typically work on properties in very poor condition.**

So you own a property or are thinking of buying a property and there's a crack in the wall or floor. Should you run a mile? Can you 'play Ostrich' and pretend it's not there? Or do you need to be concerned?

Most people are aware that cracks in a wall or structure are a cause for concern, whether down to the cost to repair, insurance implications, or issues with re-mortgaging. But some structural movement is normal; movement occurs in very small amounts all the time in property and is usually un-noticeable.

**So how do you know if it's a real problem?**

## WHERE DO I START?

As with any inventory, make a note in your diary and take a photo the first time you see the crack, with a scale and a reference point. Keep the photo so you can compare it in future (hence, the reference point). If you can, measure the width of the crack (as close as you can in mm) or even use a 'crack width gauge' (usually cost <£10). If you already own the property, go back at regular intervals and re-measure (ultimately it's all the professionals would do, admittedly with better and more detailed equipment), and ask yourself, *"Is anything happening?"*

If you don't own the property yet, but are considering a purchase, especially if there are time or legal pressures, or if the building is at risk or is high value, call in a professional for an opinion. Be upfront with them, explain what you know and offer to pay for their time for a quick assessment.

Ask for a fixed fee quote; it could save you thousands.

> **"Some structural movement is normal; movement occurs in very small amounts all the time in property and is usually un-noticeable."**

Image: Bigstock.com/orensila

# WHEN IS A CRACK SERIOUS?

**To generalise, most of the early research into cracks, subsidence and structural movement throughout the UK was done either by or for the Coal Board. Not surprisingly, more recent research has been driven by an increase in insurance costs and this information forms the basis for company-specific underwriting criteria.**

This is where it becomes tricky for the property owner and investor, as the underwriters within each company have their own criteria for property damage assessment or risk management; indeed, many companies will simply 'cross off' any application with a hint of subsidence. Hence, an industry exists for the specialist insurers and financiers, who are more expensive but not as risk averse to building repair issues.

As a general rule 'serious cracks' are said to be those greater than 5mm across, and will need an experienced, skilled person to advise and repair them. What this means is that there has been, or still is, some problem within, beneath or adjacent to your building.

# WHAT IS GOING ON?

Movement is a response to some other change. It is complex and unpredictable; it can be 'active or progressive' (with cracks increasing in size), or 'passive' (cracks are not currently expanding) and even 'cyclic or seasonal' (cracks open and close depending on the weather, heat, cold, moisture, etc.). If movement is plotted on a chart, it can be truly three dimensional, vertical, horizontal and in any direction in between. A crack is simply the first 'visible' outward expression within a structure (it may well be larger or smaller beneath the surface) and it will follow lines of greatest pressure or tension and take advantage of zones of weakness: around windows, door frames, floor joists, lintels, etc.

Broadly speaking, home insurance policies will provide cover for building damage that is a result of subsidence or heave of the site on which the buildings stand, or landslip, but do not cover for settlement (check yours!). Lots of technical definitions exist for these terms but of most relevance here for property investors is that following a recent policy amendment by Legal & General Insurance Limited, the FSA were forced to issue specific definitions. See below:

| Damage Categories | Description | Approx. Crack Width | Types of Repair |
|---|---|---|---|
| 0 | **Hairline Cracks:** Considered to have negligible structural implications. Can appear and disappear annually. | **Less than 0.1mm** | Easily filled with 'flexible sealant' or covered. |
| 1 | **Fine Cracks:** Usually internal wall damage, and cracks rarely visible in the external brickwork. Usually located at points of structural weakness. Generally have some structural significance. | **Up to 1mm** | Easily filled or covered. |
| 2 | **Moderate Cracks:** Visible internally and externally, indicate sufficient foundation movement to distort door and window frames and possibly make them stick. Weather tightness may be an issue. Most likely have some structural significance. | **2mm to 5mm** | Internal cracks need some raking out and repairing.<br>External cracks need raking out and re-pointing, and some bricks may need replacing. |
| 3 | **Serious Cracks:** Distortion to door and window frames. Service pipes may fracture. Serious compromise to the structural integrity and weather-tightness often impaired. | **6mm to 15mm** | Internal repairs needed as for Moderate but also some re-construction. External repairs to brickwork, re-pointing, windows, and weather-proofing. Use of specialist resin bonding techniques and joint reinforcement. |
| 4 | **Severe Cracks:** Windows and door frames distorted, floor sloping, walls leaning or bulging, some loss of bearing in beams and lintels. Service pipes disrupted. Structural integrity severely compromised. | **16mm to 25mm** | Major reconstruction works to both internal and external walls. Re-alignment of doors and windows. |
| 5 | **Very Severe Cracks:** Potential danger from failed or fractured structural elements. Danger of instability, safety issues to consider. | **Greater than 25mm** | Major reconstruction works, structural lifting, sectional demolition and rebuild. Replacement of doors and windows and structural supports. Specialist needed. |

Table 1. Based on BRE Digest 251 & Subsidence of Low Rise Buildings (2nd Edition, by the Institution of Structural Engineers).

**In December 2011, The Financial Services Authority (FSA) published the following definitions for Heave, Landslip, Settlement and Subsidence.**

www.financial-ombudsman.org.uk

**Heave;** Upward movement of the ground beneath the buildings as a result of the soil expanding.

**Landslip;** Downward movement of sloping ground.

**Settlement;** Downward movement as a result of the soil being compressed by the weight of the buildings within ten years of construction.

**Subsidence;** Downward movement of the ground beneath the buildings other than by settlement.

## WHAT CAN I DO?

Even though most of us are not qualified surveyors or engineers, you can get a 'feel' for the scale of the problem yourself. Here are five quick questions to ask once you've seen signs of cracking in a property:

1. **How wide are the cracks (i.e. 5mm wide or greater) and are they visible inside and outside?**
2. **Are there gaps around the windows and doors; are any of them twisted or even stuck?**
3. **Does the floor slope in a corner, or even the whole floor?**
4. **Step back from the problem and look at the whole building; is it just your property or do your neighbours have similar problems (draw out a quick rectangle elevation sketch showing the zones of damage). Can you see a pattern or even a zone?**
5. **What's the roofline like? Does the damage extend to the roof and chimney?**

Depending on what you can see, you need to think carefully about your next step.

## CAN I REPAIR IT?

Obviously smaller cracks can be filled with a choice of flexible sealant, cement-based filler or resin compound. Larger non-active cracks can be repaired with expanded metal mesh, or stitched together with metal bands and/or helical rods, and sections of wall can be re-built (usually in combination). Nothing is ever simple though because it's important that your repair be compatible with the current building, otherwise there's a possibility that your new repair will be much stronger than the rest of the structure, causing a new zone of weakness around the repair. If you have serious active cracks or tricky repairs such as a damaged cess pit, a 'bowing' bay, an archway, a steel frame, etc., you definitely need specialist advice.

We all know that the moment you bring in a professional there are cost implications, but remember they are working for you. You are the client and they have a duty of care to give you the best data collection, analysis and interpretation that they can (remember if you bring them in, the report is yours and does not go to any third party).

Your professional will aim to identify the cause of the problem, most likely conducting desktop research, a monitoring survey and a ground/building investigation. Step one is to identify and remedy the cause of the problem, and then the building and/or its foundations can be repaired. Eventually, on completion of the remedial works, it may be possible to have a 'Certificate of Structural Adequacy' issued by the professional or expert, but this should not be confused with a warranty or guarantee.

## HOW DOES THE DAMAGE AFFECT ME?

It's the old 'how long is a piece of string' analogy! Every case will be different; each property will be different; and everyone's financial circumstances or position will be different. So to generalise, any cracks that categorise as less than 2 are easily repaired and unlikely to be of interest to a surveyor or insurance company. However, cracks that you can see that are increasing in size year on year (i.e. 'active') indicate a developing problem and it's worth seeking good advice.




## EXAMPLE: HOUSE IN RUNCORN

Traditional construction brick and slate roof, end terrace for conversion to 5-bed multi-let. Property in poor condition, numerous serious cracks (category 2 and 3), very damp and tree root problem in gable/cavity at 1st floor level.

- **Purchase price: £62,000**
- **Refurbishment cost: £15,000**
- **Additional specialist structural repair works: £4,000**

### PROBLEM

- **6 x small lilac trees rooting from the adjacent large 'zinc' gutter, completely penetrating wall and cavity, necessitating opening up of brickwork to remove roots (up to 4m long), partial rebuild and repair of gable and repair of neighbour's guttering.**
- **Serious cracks up to 10mm across.**
- **Cracks exposed and cleaned. Internal cavity wall 'stitched' and repaired with steel bars, helical rods, resin and sand cement mix. External cavity wall opened up, roots removed, part re-built and wall tied in sections.**