

# The Subsidence Forum Innovation Group

## Innovation Newsletter

EDITION 5 April 2009



### THIS ISSUE

**Welcome to the Fifth edition of the Subsidence Forum's Innovation Group's newsletter.**

Although it is a very quiet period in the subsidence cycle, there is still a great deal of work being carried out to bring innovative methods of dealing with subsidence and also to improve the way we handle subsidence claims.

In this edition we look at some of these aspects, starting with a great article from Giles Biddle beginning the debate about the merits of level monitoring. It is hoped that this can be developed within the Joint Mitigation Protocols to provide guidance over the interpretation of both levels and site investigation results. In this way we may be able to focus our efforts and hopefully improve public perception by showing that we are not trying to fell every urban tree but targeting those trees causing real problems. Linked with this Jon Gray from Crawford shows recent development with remote level monitoring which is now reaching the point of more widespread commercial use.

Developing techniques to allow us to retain trees is something I am sure we all endorse and hopefully something we can develop in future editions. Keiron Hart from Marishal Thompson explains how The Marishal Thompson Root Deflector System® can allow us to retain trees, reduce our carbon footprint and even settle claims more quickly ... sounds too good to be true but it isn't.

Looking at claims handling, Geoff Davies from Ellipta provides an insight to the issues arising from Asbestos and the correct application of the Control of Asbestos Regulations.

No edition would be complete without a legal update and thanks to Sarah Dodd from Eversheds for summarising an interesting case considering the meaning of 'Fit for Habitation' under the Defective Premises Act.

**Richard Rollit**

### LEVEL MONITORING FOR INVESTIGATING TREE ROOT DAMAGE TO BUILDINGS

The historical approach for remedying tree induced subsidence was to underpin. Site investigations were aimed at obtaining information for underpinning design, i.e. trial pits to expose the existing foundations, and boreholes to determine soil conditions at depth. In order to provide proof of the involvement of the tree, root samples were taken and soil samples were analysed to try to demonstrate desiccation.

It is now recognized that in most situations underpinning is unnecessary and that foundations can be stabilized by appropriate tree management, usually felling the offending tree or carrying out heavy crown reduction. Site investigations



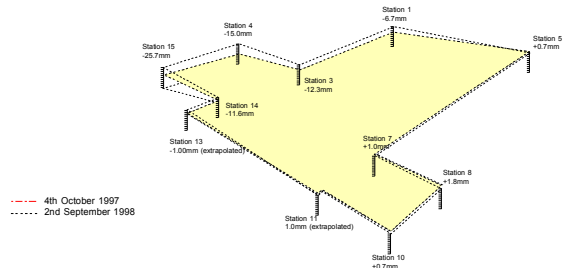
should reflect this change, and be aimed at providing the information to allow appropriate decisions on tree management, in particular:

- Confirmation that vegetation-related subsidence is involved.
- Identification of which tree(s) or shrub(s) are involved.
- Assessment of the risk of heave if a tree is felled or managed.
- Identification of need for any other site investigations.
- If the tree warrants retention, assessment of whether partial underpinning would be sufficient.
- Confirmation that vegetation management has it been effective in stabilising the foundations.
- Provision of information within an acceptable timescale.

Level monitoring provides definitive information on all of the above, and in most situations is the only investigation which should be necessary. Trial pits, boreholes and root identification do not provide relevant information and are of very limited value.

Where vegetation is involved, it produces a characteristic seasonal pattern of foundation movement; subsidence in the summer reaching a maximum usually in September, followed by upward recovery in the winter. No other cause produces a similar pattern. Level monitoring can demonstrate this pattern. If it is occurring, there is no need

to try to demonstrate shrinkable clay or desiccation – soil drying by vegetation must be involved (unless the foundations are less than 300mm). One does not need to demonstrate the full cycle; just sufficient to confirm movement is consistent with this pattern. Monitoring upward recovery in the winter is particularly valuable.



If vegetation is involved the greatest movement is usually closest to the culprit. Unless trees are very close to each other, the spatial distribution of movement can thus help to identify the culprit. The influence of trees is likely to be fairly widespread whereas shrubs are localized.

If there is a risk of heave, the rate of recovery through the winter will remain fairly constant as the persistently desiccated soil will be continuing to rehydrate. If there is no risk of heave, the rate of recovery will reduce and stop during the winter as rehydration completes. Monitoring through the winter therefore enables informed decisions on whether further recovery/heave will occur.

The pattern of movement detected by level monitoring is sometimes unusual, e.g. no movement where it might be expected, or vice versa. If so, other investigations can be formulated to try to explain the anomaly. For instance, if part of a building closest to a tree is not moving whereas other parts are, is this because of previous partial underpinning? Trial pit(s) at relevant locations can provide an answer. There is little point in starting other investigations unless level monitoring indicates a specific need.

In some situation the tree may warrant retention and the building underpinned. If so, level monitoring will show which parts of the building are moving, and thus how extensive any partial scheme would need to be.

Most importantly, level monitoring should be continued after vegetation management has been implemented to confirm whether the foundations are stable. If they are not, it can help identify the cause of any continuing movement so it can be addressed.

The criticism often aimed at level monitoring is that it is too lengthy a process. Provided it is used correctly, such criticism is unjustified. The process only becomes too lengthy if there is a failure to interpret the results as each set becomes available, or even the attitude that readings must be taken for a full year before any conclusions can be reached.

Tree-induced subsidence damage typically occurs in the autumn (mid-September), with a peak of notifications to insurers soon after. Level monitoring should be commenced at the earliest opportunity, as monitoring the recovery movement through the winter is particularly valuable – rehydration of a clay soil is the only factor which can cause upward movement, and can thus quickly confirm that vegetation is involved and identify the culprit.

The correct use of level monitoring should depend on the complexity of the situation. If a TPO is involved, or there is a need for irrefutable evidence for 3<sup>rd</sup> party recovery, or concern about the risk of heave, monitoring at regular intervals is required: This might involve:

- Initial set up and 1st set of readings as soon as damage notified. If there is prompt notification, this should be by October.
- 6 – 8 weeks later (November/December). 2nd set of readings, allowing preliminary diagnosis of recovery movements, which should confirm that vegetation is involved and allow preliminary identification of the culprit. Initial notification can be sent to any third parties involved.
- 6 – 8 weeks later. (January/February). 3rd set of readings. Confirmation of preliminary diagnosis, and possible indication whether other investigations are needed. Results submitted to third parties, and TPO application if relevant.
- 6 – 8 weeks later. (March/April). 4th set of readings. Confirm diagnosis, identify whether any need for other investigations, and assess whether risk of heave. Results can be discussed with third parties/lpa and decision taken on remedial action. If relevant, alternative partial underpinning options can be costed.
- **April, or May at latest. Implement vegetation remedial action.**
- Mid July. 5th set of readings. Assess whether remedial action effective, if necessary implementing further action.
- September. 6th set of readings. Confirm whether remedial action effective.
- Subsequent years. Level monitoring markers can be left in situ to allow readings in the event of any further problems.

The above sequence is applicable in situations where detailed information is essential. In simpler cases, for instance involving the homeowner's own trees, after the initial set up only a single further set of readings may be needed in the spring to identify the culprit and allow the decision on remedial action, plus any necessary confirmation that action has been effective.

Even if the process cannot start in the autumn, monitoring at other times can provide quick results. It is, however, essential to think about the timing of the seasonal cycle, and plan accordingly. There is no point in readings in mid summer part way through the subsidence cycle, with the next taken in mid winter part way through recovery.

With more companies carrying out level monitoring, the costs are falling, typically now just over £100 per set, and likely to fall further. In most situations other investigations will be unnecessary, or anyway greatly reduced, allowing considerable savings. Level monitoring is thus cheaper, provides far more relevant information and within a short time frame, and avoids protracted arguments about interpretation of soil data. The obligation to provide level monitoring data in TPO applications and the recent case of *Raphael –v- Brent* suggest that it should soon become the investigation of choice.

**Dr Giles Biddle OBE**

## REMOTE CONTROL

Crawford have pioneered the development of Electro-leveling in building movement and after an extensive research and development program, we are at long last in the final stages of training our suppliers in anticipation of adding electro leveling to the Surveyors / Engineers 'tool bag'.

Electro-leveling allows remote level monitoring of a property to determine if ground movement is affecting the foundations without the need to regularly visit the property.

It uses advanced electronic tilt sensors housed in small boxes, which are completely self-contained with their own power supply. The precise high-resolution data is transmitted via GPRS to a secure database for analysis.

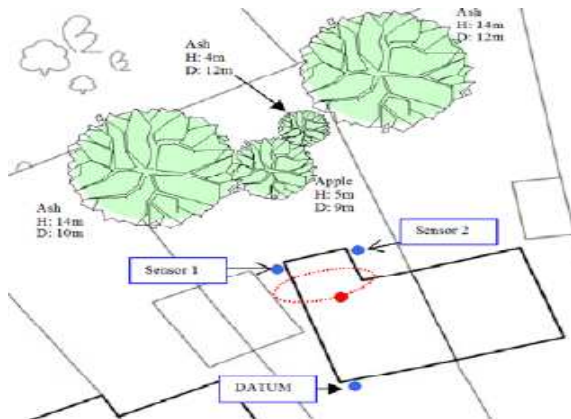
Crack and level monitoring has traditionally been expensive and slow. The main area for complaint in subsidence claims is delay, often associated with the monitoring phase.

Since the National Subsidence Unit was formed, our aim has been to reduce and remove the need for traditional monitoring. Crawford has developed the use of differential level monitoring, reducing the costs dramatically. Better diagnosis of subsidence claims has been a direct result of the wide scale adoption of differential leveling with industry recognition of the advantages to be leveraged from this technique.

However, with increased supplier charges slowly eroding this margin and the inherent problem of the monitoring period still make this a relatively slow process.

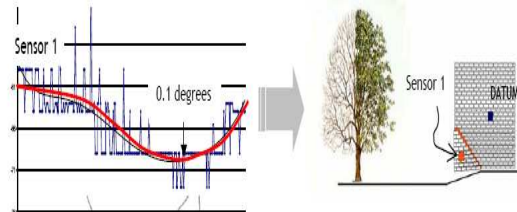
Electro-leveling is the next generation of differential level monitoring. It offers service improvement for less input and disruption.

Below we reproduce an example provided previously to the Clay Research Group, relating damage to a single storey extension within influencing distance of a group of trees – predominantly Ash – see below.



The date range is from 22nd May to the 23rd December 2008. Sensors measure rotation in degrees and one has been fixed either side of the extension. There is a datum remote from any trees. The 'y' values represent digital output, which is then converted to degrees.

Because the movement is angular, and because buildings flex when subsiding there is no simple method of deriving vertical movement using electro levels. Subsequently, Surveyor's/ Engineers will be given guidelines on the degree of rotation that is regarded as significant in relation to the length of wall etc. Essentially the sensors provide evidence (or the absence) of root induced clay shrinkage. In addition, by matching the periodic signature against a datum a probability can also be estimated.



### Sensor 1 (above)

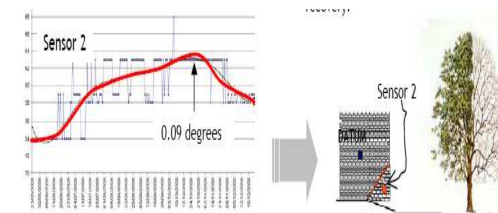
Electro level rotates anti-clockwise in the summer, and in influencing distance of tree roots.

### Change Date

The date of contra flexure was the same for both sensors - the 19th and 20th of October, 2008. This is the period when downward movement changes to recovery and couldn't sensibly be gathered – almost to the day and site specific – by any other form of monitoring.

### Sensor 2 (below)

Clockwise rotation in the summer, followed by recovery.



We have I'm sure, all heard the 'salesman patter' surrounding remote technology and how it will revolutionise the Industry many times, however in reality to date, it has not.

Crawford now considers that 'proof of concept' has been achieved and the Technology is reliable. The elusive 'explosion' onto the market however is not as many feel due to the initial outlay in purchasing units, (which is comparatively low) but it is due to the associated logistics (storing, insuring, installing, removing) required to maintain the efficient use of the units to generate the economic savings that we can all identify, should be achievable.

It's all very well having the technology and buying said units, but it's the practicalities involved that need to be understood and managed, for success to follow.

Having embraced the new Technology with our network of monitoring suppliers, we have overcome the logistics issues that have previously hindered remote monitoring and now look forward to its introduction.

Jon Gray

## The Marishal Thompson Root Deflector System®

The Marishal Thompson Root Deflector System® can be an effective solution to subsidence claims. They are not suitable in all cases but 15 years of effective installations tells us they work WHEN DESIGNED AND INSTALLED EFFECTIVELY. They deliver a number of benefits to the insured. All works are undertaken externally, minimising the impact on the homeowner and saving on relocation costs. An average installation takes 5-10 working days.

Whilst the methodology of design remains consistent, each site is subject to its own bespoke design and fit specification delivered by our in-house team of specialists. This allows us to ensure that we tailor make each installation project to the specifics of the site. This ensures a professional installation to an appropriate depth and length in all instances. Additionally and all important is the ability to remove the problem from the engineers desk and deal with all Local Authority permissions required when dealing with TPO trees.

The Marishal Thompson Root Deflector System® is particularly effective in instances where Tree Preservation Orders exist and the Local Authority is advising that any application to fell will be met with a refusal. The Marishal Thompson Root Deflector System® is tree officer friendly. The Local Authority may require evidence that significant roots will not be severed prior to installation. Once the bespoke site plan is prepared we can undertake air spade investigations to uncover the presence of any roots and demonstrate to the Local Authority that the work can proceed without damaging the tree. In order to secure a route to S203 compensation a decision may be made to apply to fell the tree to generate the refusal from the Local Authority.



Fig 1 – Access may not be apparent at first. The shrubs were pruned and the outhouse carefully dismantled.

The installation process involves rigorous adherence to health and safety. All work is undertaken in house allowing complete control over the processes and training required. Following the design phase, and subject to instruction to commence installation the site compound is established. Suitable safety systems are employed to ensure that excavated routes are safe and secure.



Fig 2 – Machinery appropriate to the site space is utilised.

The deflector material is installed, and this is enhanced by the provision of a further feature by way of a compacted layers of aggregate. Our design will be bespoke to soil type and tree species.

Following completion the site is returned to its previous condition and customer feedback tells us we have this part of the process correct. Homeowners understand the extent of the operation that has been undertaken and we take pride in ensuring that the site is left as clean and tidy as possible following an installation.



Fig 3 – A homeowners garden immediately following installation.

A major benefit of The Marishal Thompson Root Deflector System® is its ability to avoid the use of concrete. Each ton of concrete is equal to a ton of CO<sup>2</sup>. We will advise on whether the Marishal Thompson Root Deflector System® is appropriate to the specific site but in cases where it is you could benefit from reduced disruption to the homeowner, faster resolution to the claim, retained amenity from the trees, reduced impact on the environment and potentially secure your money back by way of recovery or compensation claim.

**Keiron Hart**

## Asbestos and Domestic Insurance Claims – A Discussion Document

Many conflicting issues are raised with regard to domestic insurance claims and the correct application of the Control of Asbestos Regulations.

The main question that we find is asked time and again is “who is responsible and for what?”

Most competent parties involved in any insurance claim by now understand that reasonable steps have to be taken to identify asbestos materials, as well as the need for adequate funding to be made available to ensure that proper, safe and legal remedial work is undertaken where asbestos is involved. Whilst the basics are therefore well understood, the detail of how and when to apply which regulation often causes confusion in the industry.

In most insurance claims, three parties are usually involved, although this is not necessarily the case with all procurement routes. These are normally the insurance company, a loss adjuster or nominated project manager, and a repair contractor.

Under Regulation 5 of the Control of Asbestos Regulations 2006, “An Employer shall not undertake work in demolition, maintenance, or any other work which exposes, or is liable to expose, his employees to asbestos in respect of any premises....”

Whilst a domestic property does not fall under Regulation 4 “Duty to Manage Asbestos in non Domestic Premises”, the area where the repair works are to be carried out by the contractor becomes a work place, under the definition of the Health and Safety at Work etc. Act, for the duration of the work.

All of this would perhaps lead you to believe that the contractor is therefore the one responsible for identifying the presence of asbestos? You may be wrong.

Should the project fall under the jurisdiction of the CDM Regulations 2007, it could be a requirement that a Type 3 asbestos survey be carried out, dependent upon the nature of the works involved. In such cases this would normally be done prior to the contract for the work being awarded, so that the contractor can view it’s implications upon his project costs and programme, as well as incorporating this information into his Health and Safety plan.

This would perhaps lead you to believe that the party awarding the work, i.e. the loss adjuster or nominated project manager, would therefore be responsible for identifying the presence of asbestos? You may be wrong.

Under their Duty of Care to their clients, (i.e. the customer or policyholder), the insurance company is required to ensure competency of their contractors and that all relevant regulations are adhered to during the remedial works. Furthermore, the insurance company have a duty of care to ensure that the contractor used is also fully insured for working with asbestos.

This would lead you to believe that the insurance company bear the primary responsibility for initially checking for the presence of asbestos? Again you may be wrong.

The simple truth is that all parties share the responsibility.



By appointing a loss adjuster or other specialist to manage the claim, some insurers may believe they have delegated their responsibilities in this regard. Whilst in practice it is perhaps reasonable for an insurer to place considerable reliance on such expert advice, this alone does not eliminate the legal responsibility that an insurance company has to its customers. Regular and well documented reviews, competence checks and independent site audits are highly recommended to ensure that all asbestos materials are being properly and correctly managed.

The loss adjuster or specialist appointed to manage the claim (or indeed insurers themselves where contractors are directly employed under network arrangements), should then normally appoint an approved (and preferably UKAS accredited) specialist to look for the presence of asbestos, if they believe, using a combination of previous experience and risk assessment, that the nature of the work warrants such investigation.

This appointed asbestos adviser should normally have had to undergo a detailed pre-qualification exercise covering areas such as levels of competence, training and insurance. Some companies trading in this field may also be experienced asbestos removal contractors, and therefore be able to offer a complete asbestos management service. As before, the engagement of such experts may be viewed as going some way towards exercising the project manager’s duty of care, but it does not eliminate their legal responsibilities to their clients.

If asbestos is identified during the investigation process, a competent contractor must be appointed to carry out the work and in most cases this would probably prove to be an HSE asbestos licensed contractor. Once a clearance certificate has been issued for their work, a general builder can then proceed with the final repairs.

So far so good you may be thinking. By such an approach the possibility of something going wrong in the process is significantly reduced, and the specialist removal contractor is responsible for everything?

However, as a final word of caution, consider the following scenario and decide for yourself who is responsible...

A property suffers minor damage to a ceiling from an escape of water. The insurance company appoints a loss adjuster who in turn sends in a competent sampling company to test the damaged ceiling for the presence of asbestos. The test results prove negative, no asbestos is identified and the loss adjuster appoints a local building contractor to carry out the repairs. The contractor attends site, and half way through taking down the ceiling (using dust sheets as nominal protection to carpets, furniture etc) discovers that there is a further untested and asbestos containing material above the one initially tested, and this has been disturbed during the works to the ceiling. This has caused asbestos contamination to the property (such a scenario could arise where the initial test was on a ‘suspect’ textured finish, but didn’t extend to include asbestos insulation board beneath, or perhaps where pipe lagging exists within a floor void).

My practical advice in such circumstances? Firstly, immediately stop work. Seal off the area (which may be as simple as closing the door). Get the area tested and if positive for asbestos, carry out remedial action using an approved asbestos contractor (this may entail full decontamination of the affected area, including disposal of contaminated carpets, fixtures and fittings).

I think we would all agree, a regrettable, costly and time consuming exercise, no doubt. But who is responsible?

You can decide for yourself, but my own opinion is probably....Everyone!

We must all strive to do our best to avoid such situations in the first place, but the starting point must surely be a greater industry understanding of the problem, a better appreciation of the various regulations in place and, above all, asbestos awareness training of all those involved.

#### **Geoff Davies**

*Note: This document has been prepared by the author on behalf of the BRE Subsidence Forum to promote industry discussion and greater awareness of Health and Safety issues. It is intended to be for educational purposes only and should be considered under any circumstances to be a definitive guide to current asbestos regulations. Expert advice should always be sought in relation to materials containing asbestos and the particular situations in which they are encountered. The views expressed in this article are those of the author alone, and are not necessarily representative of any company or organisation.*

#### **Consideration of the meaning of "Fit for Habitation" under the Defective Premises Act**



**Bole and Van den Haak v Huntsbuild Limited (1) and Richard Money (trading as Richard Money Associates) (2) [2009] EWHC 483 (TCC)**

The Claimants engaged Huntsbuild to build a detached house. A willow tree and row of conifer trees were removed from the site before the foundations of the property were laid by Huntsbuild. In carrying out this work Huntsbuild had relied upon the advice of Richard Money Associates (RMA) as to the foundations to be built for a new property. RMA provided a site investigation report and recommended a depth for the foundations. The plan of the foundations provided by RMA was in breach of the NHBC Standards "Building near trees" as it did not specify the precise required depth of foundations to take into account the trees that had been removed from the site before the construction of the house. Following the construction of the house it began to develop cracks.

The Claimants sued Huntsbuild for breach of contract and sued both Huntsbuild and RMA for breach of section 1 of the Defective Premises Act.

In considering the case the Judge found that the house had suffered heave damage as a result of the inadequate foundations. The foundations were inadequate as they had not taken into account the presence of the trees that had been removed from site before the foundations were laid.

Section 1 of the Defective Premises Act states:

*A person taking on work for or in connection with the provision of a dwelling...owes a duty ....to see that the works which he takes on is done in a workmanlike or, as the case may be, professional manner, with proper materials and so that , as regards that work, the dwelling with be fit for habitation when completed*

HHJ Toulmin CMG QC gave the following guidance relating to the Defective Premises Act:

1. The finding of unfitness for habitation when built is a matter of fact in each case;
2. Unfitness for habitation extends to...."defects of quality" rendering the dwelling unsuitable for its purpose as well as to "dangerous defects";
3. Unfitness for habitation relates to defects rendering the dwelling dangerous or unsuitable for its purpose and not to minor defects;
4. Such a defect in one part of the dwelling may render the dwelling unsuitable for its purpose and therefore unfit for habitation as a dwelling house even if the defect does not apply to other parts of the dwelling;
5. The Act will apply to such defects even if the effects of the defect were not evidence at the time when the dwelling was completed;
6. In considering whether or not a dwelling is unfit for habitation as built one must consider the effect of the defects as a whole.

The Judge held that:

1. The failure to excavate the dwelling to a sufficient depth causing heave is a defect of quality which is capable of rendering the house, as built, unfit for habitation;
2. On the facts, the house as built was unfit for habitation in contravention of section 1 of the Defective Premises Act.

Judgment given to the Claimants against both Defendants in the sum of £218,616.91 plus interest.

**Sarah Dodd**