

The Clay Research Group

RESEARCH AREAS

Climate Change ♦ Data Analysis ♦ Electrical Resistivity Tomography
Time Domain Reflectometry ♦ BioSciences ♦ Ground Movement
Soil Testing Techniques ♦ Telemetry ♦ Numerical Modelling
Ground Remediation Techniques ♦ Risk Analysis
Mapping ♦ Software Analysis Tools



The Clay Research Group

April 2013

The Clay Research Group

CONTENTS

Issue 95, April, 2013

Page 1 & 2

News and Contents

Page 3

Tree Root Claims Liaison Model

Page 4, 5, 6 & 7

Count of Council Trees on Clay Soil

Page 8

Rainfall – Frequency Distribution

9 & 10

The Aston Subsidence Conference

Page 11

Aston Program



The Annual Subsidence Conference

The conference will be held on the 26th June, at Aston University in Birmingham and the program appears on the last page of this newsletter. The speakers will outline changes in the legal framework following Jackson and Berent plus provide updates on current research.

Risk from Council Trees

This month we look at the London Government's estimated count of trees to see if we are using the correct criteria to make a sensible assessment of risk.

Only those trees within influencing distance of houses situated on clay soils are relevant to the exercise and our analysis may assist decision makers.

2012 Claim Numbers

The ABI reports just under 22,000 claims in 2012, and given the wet weather, we assume that valid claims could be less than 50% of this figure. The cost of these claims amounted to just over £100m.

These are amongst the lowest figures reported both in terms of numbers and cost for the last 20 years.

As Global Warming is replaced by Climate Change we anticipate a reduced probability of surge and event years in the foreseeable future.



Subsidence Forum

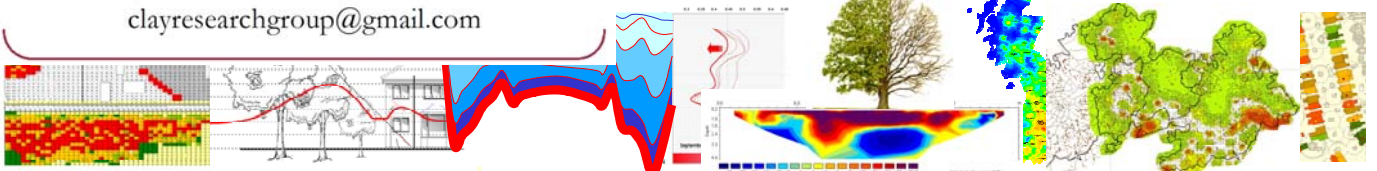
The Subsidence Forum are considering the Tree Root Claims Liaison Model which is less prescriptive than the Joint Mitigation Protocol and more concerned with promoting best practice.

Proposals drafted by Andrea Plunkett of Welwyn & Hatfield Borough Council have been circulated for discussion. The approach is one of building closer working relationships to achieve an equitable outcome on tree related claims. See page 3 for outline.

THE CLAY RESEARCH GROUP

www.theclayresearchgroup.org

clayresearchgroup@gmail.com



The Clay Research Group

Rainfall Analysis

Cyril Nazareth has undertaken further analysis of rainfall and says “the Mean Annual Rainfall Data for the UK, published by the Met Office and covering the last 100yrs (1912 – 2012) confirms that the last decade has been the wettest on record.

But how wet or how dry have, say, the last 20yrs been?

It is interesting to note that from the year 1993, there has been some significantly wet weather over the 3yrs 1998, 1999 and 2000.

This has been followed up in 2002, 2008 and most recently 2012.

The significant exceptions have been 1996, 2003 and most recently 2010.

The remainder of the years ranked higher than 20 and lower than 80 have annual rainfall that is fairly evenly distributed across the average rainfall for the last 100yrs.

The question that arises out of the above is how significant are the dry/wet years in relation to the frequency of occurrence and therefore how often can we expect to experience the more extremes of both wet and dry weather in the years ahead?”

Cyril’s analysis appears on Page 8 of this edition.

Hortlink II

Neil Hipps has commenced his study into the effect of crown reduction and is looking for some specific case studies where level monitoring has continued over a tree pruning cycle to show whether the pruning has been effective or ineffective. If you have any examples that might be useful Neil can be contacted at neil@hipps.co.uk.

Legal Reforms

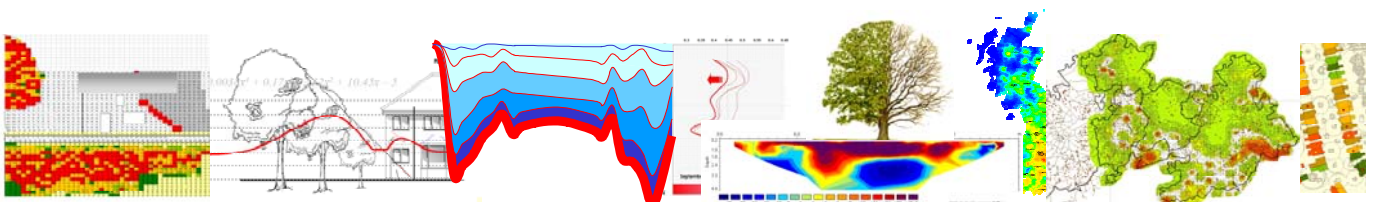
The Jackson Reforms came into effect on the 1st April and, combined with the Berent decision, will have a significant impact on recovery actions against Local Authorities.

The Legal Aid, Sentencing and Punishment of Offenders Act 2012 also comes into effect at the beginning of April, and will change Conditional Fee Arrangements whereby solicitors fees are based on their success or otherwise.

The FSA have been split into two bodies. The Prudential Regulation Authority will oversee the financial governance of insurers, and the Financial Conduct Authority will be responsible for regulation of conduct in retail, as well as wholesale, financial markets and the infrastructure that supports those markets.

The two bodies will be required to work closely with the FOS to try and detect when things are going wrong (PPI etc.) earlier.

Finally, we have the Consumer Insurance (Disclosure & Representation) Act 2012 which also came into effect on the 6th April.



The Clay Research Group



Tree Root Claims Liaison Model

This is a small extract from a series of documents and tables.

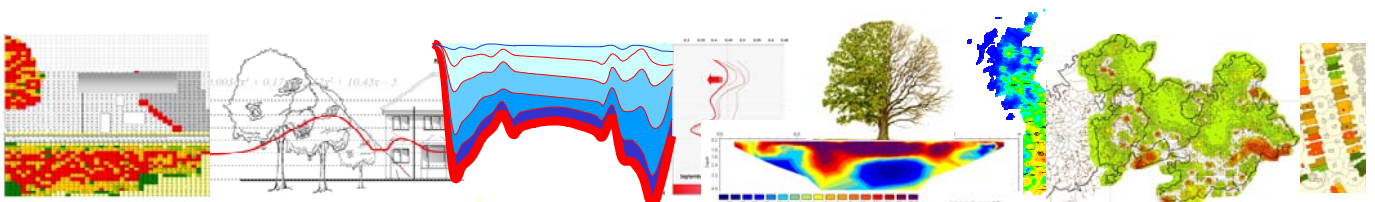
The Tree Root Claims Liaison Model seems to be a major step forward in bringing the various interest groups together.

Feedback was required by the 1st April. The date has passed but the person to contact is...

a.plucknett@welhat.gov.uk

Below we have reproduced some of the main suggestions from the Tree Root Claims Liaison Group that have been drafted for discussion. The paper “*sets out a proposed model for liaison between parties to encourage better communication, improve the quality of information exchanged and provide swifter and less costly resolution to claims.*” The following is an abbreviated extract. It is not a comprehensive explanation of the proposals. Contact A.Plucknett@welhat.gov.uk for information.

1. Describe the location, species and metrics of the tree that you feel has caused the damage. Mention other nearby vegetation and if you are discounting it as influential, explain why.
2. Provide photographs and sketches of the damage in each room, room layout plans and a site plan.
3. If the site investigation does not support a finding of vegetation related soil shrinkage, explain why. If a control borehole was used, provide results, otherwise explain why it was not possible or not believed to be relevant.
4. When monitoring results are available, provide a clear interpretation.
5. If there are other possible causes of the damage, explain what these may be and why you have discounted them. Similarly, if there are areas of damage that are not related to subsidence, identify where these are and the probable cause.
6. Explain why tree removal will not result in heave to the subject or a neighbouring property. The document provides several examples of why this may be so, including shallow depth of shrinkable clay beneath the foundations, soils of low plasticity etc.
7. If heave is thought to be a problem, then say so and discuss in detail.
8. Provide an estimate of the likely cost of repairs if mitigation work is carried out and also the cost if it is not.



The Clay Research Group

Count of Trees on Clay Soil near to Buildings

The Mayor’s “London Tree and Woodland Framework” publication states that the perceived threat of subsidence is much greater than the actual threat and the report estimates that less than 1% of the total tree population has actually caused damage to properties.

The document says “this has led to the London Tree and Woodland Framework Manager (LTWF Manager) naturally concluding that insurance industry subsidence statistics should be challenged.”

“Street Trees” reiterates that less than 1% of the total tree population has been proven to have caused damage.

“No Trees, No Future” (2008), reports that only 0.05 percent of houses in London Boroughs had been affected by tree related insurance claims annually.

This study looks at the risk posed by trees in public and private ownership within the M25, using the following criteria.

We have only taken account of (a) properties and trees situated on shrinkable London clay and (b) those trees within the modelled influencing distance of domestic properties.

Trees that are remote from buildings and houses situated on non-shrinkable soils have been discounted.

As a starting point, the London Government estimate the total tree population to be between 6 – 7 million, of which around 500,000 are street trees.

Our study seeks to clarify the number that satisfy the study criteria. How many of these trees pose a threat in respect of root induced clay shrinkage?

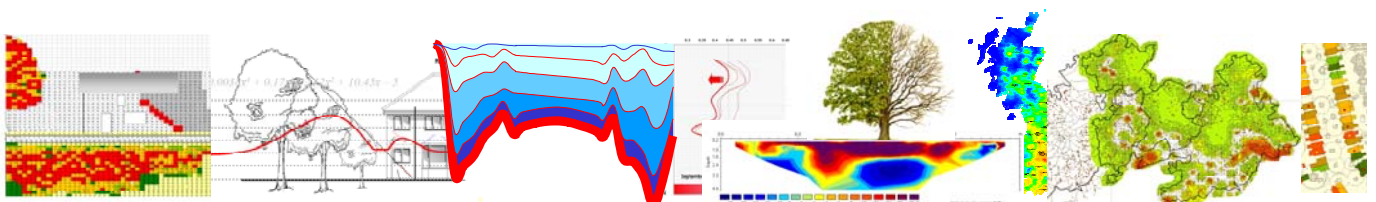
The usual caveats apply. The study is a ‘snapshot in time’. Trees are being felled and planted all of the time. Comparisons between datasets with differing objectives will produce different results. Although we have specified London clay, other soils can be troublesome – for example drif deposits can contain sufficient clay to cause similar problems.

However, the outcome suggests that the method is as robust as might reasonably be expected given the foregoing.

The Data Sample

We have used a ‘valid only’ claim sample of just over 73,000 records, including one surge year – 2003. This equates to just under a four-year industry claims experience on the basis of 3 ‘normal’ years with 15,000 valid claims, and 1 surge year with 35,000 valid years = 80,000.

The claim sample covers 2002 – 2005 approx, and the tree survey was undertaken in 2005.



The Clay Research Group

“Only counting houses on clay soil with trees nearby”



Claims

From the UK claim sample of 73,000 valid claims nearly, 26% fall within the M25. Just over 20% of the total UK claims are on clay and within the M25.

Trees on Clay Soil

Of the 6m or so trees in public ownership, we estimate that just over 170,000 meet the study criteria. The majority of these (visually judged to be in excess of 80%) are street trees.

Public trees account for around 11% of the tree population on clay soils, near to buildings. This is just under 3% of the total London public tree population – assuming a figure of 6m.

There are just over 1.2m trees in private ownership that meet the study criteria.

Houses on Clay Soil

Within the M25 there are in excess of 3m houses. We estimate that 1.7m are on London clay – approximately.

Output

Comparing the tables provided by the Council, it can be seen that there are far fewer trees in the risk population than the overall count suggests – put another way, the trees are actually 35 times riskier than the London Government publications might infer in terms of frequency.

If the calculation is based on street trees only, then the risk is 3 times greater than the current estimates suggest.

The risk in terms of count of houses would be doubled (they are not included in the various reports), ignoring the added risk posed by the trees discussed above.

This ‘enhanced risk’ only relates to the notional estimates of tree population that appear in the various published reports issued by the London Government. When comparing claims with the tree population relevant to the exercise, frequencies are only slightly above the national average.

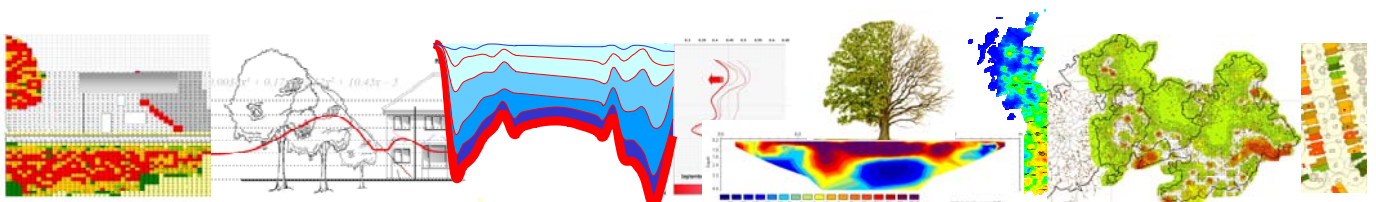
SUMMARY

Our study suggests that trees under the control of the London Boroughs present a far higher risk than is currently suggested in published reports.

By using a “6 million trees”, or “500,000 street trees” base, the risk is significantly underestimated. Reference to so few claims compared with the entire tree population is misleading. The majority of trees in London are not on a highly shrinkable clay soil and within influencing distance of buildings.

All of that said, public trees do not present a higher risk than trees in private ownership. There is a good correlation between tree ownership and claims incidence for private and public trees.

The close relationship between the number of claims and the count of trees also suggests that insurers do not ‘target’ Local Authorities or select against them.



The Clay Research Group

Facts & Figures – Checks & Balances

There are 1.42 houses per private tree and 10.48 houses per public tree. The ‘magic ratio’ is maintained in terms of relationships between public and private trees – and claims as we shall see.

Our sample produces an average of 389 claims p.a. in the area of interest, which compares with 404 from the London Assembly publication, suggesting the datasets are comparable.

The claim frequency from the sample we have used = 0.2% which tallies broadly with industry data. Although the risk is under-estimated in various Government publications, it is only slightly higher than the UK average.

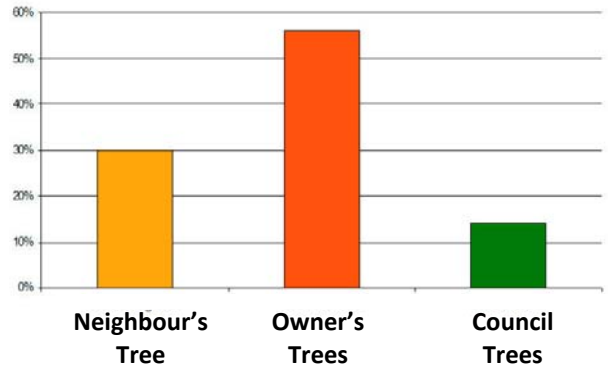
On average there are 506 houses per claim notified – or 2 claims per thousand properties, per annum.

Over 77% of the claims within the M25 were on clay soil, reinforcing the earlier findings by others, suggesting around 70% of valid claims are related to trees.

NOTE

Data will vary by source. For example, we would anticipate that arboriculturalist’s records might suggest far higher numbers of Council trees implicated in subsidence because they (arborists) will be engaged to provide more reports for Council owned trees than private ones.

The homeowner might remove a small conifer growing against the front corner of their house without the involvement of an arborist, whereas TPO enquiries and recoveries will involve an arborist.



From a sample of 36,000 claims involving trees, those in the ownership of the Council represent the smallest category. “Owners” trees refers to trees in the ownership of the homeowner whose property has been damaged.

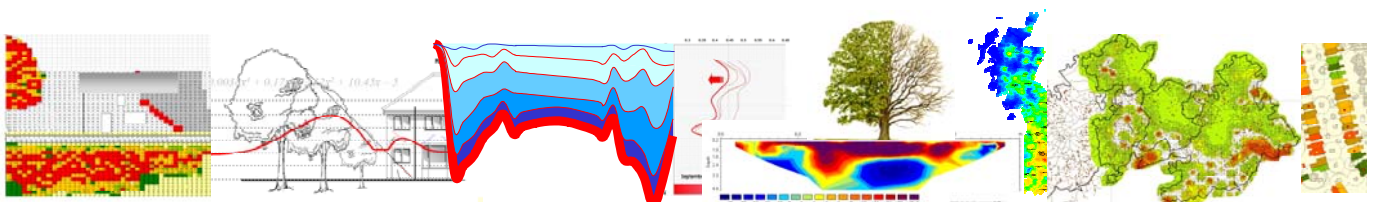
SAMPLE AREA - BROMLEY

Taking the most extreme example to illustrate the rationale of this study, Bromley has around 36,000 trees according to the Borough. See table on following page.

Our analysis suggests that, in Bromley, only 4,900 or so trees are on clay soils and close to buildings – that is to say, within 1.2 times the tree height.

The London Assembly, “Chainsaw Massacre”, (May 2007), records 700 trees removed over a five year period in Bromley, of which 100 were removed as a result of subsidence.

The current criteria suggests that the risk frequency of Bromley trees is $100/36,000 = 0.002778$ over five years. In fact, the risk is $100/4,967 = 0.02$. Far higher. More than seven times riskier than the current estimates suggest.



The Clay Research Group

	Street Trees	Actual	% of Population
Camden	8,282.00	7,569	91%
Harrow	16,810.00	13,081	78%
Brent	20,000.00	15,553	78%
Islington	10,455.00	7,322	70%
Barnet	29,119.00	19,749	68%
Haringey	11,500.00	7,527	65%
Lewisham	9,278.00	5,447	59%
Lambeth	6,888.00	3,428	50%
Ealing	24,511.00	11,265	46%
Waltham Forest	20,000.00	9,084	45%
Enfield	25,000.00	11,265	45%
Kingston upon	11,000.00	4,108	37%
Merton	16,150.00	4,163	26%
Croydon	33,000.00	6,012	18%
Southwark	16,500.00	2,589	16%
Bromley	36,000.00	4,967	14%
			50%

Data extract from Table 1, GLA Environment Committee, “Branching Out – The Future for London’s Street Trees” (2011). The “Actual” column heading refers to estimates of trees from our own study within influencing distance of houses and on clay soil at the date of the survey.

Overall, the data in the above table suggest that current estimates across the Boroughs listed are, on average, half the correct value in terms of the risk posed by trees.

Camden, Harrow and Brent are at the top of the table, and as a consequence will perhaps have a more realistic handle on risk. In contrast, the remaining Boroughs may have a slightly skewed view.

Of course the objective of collecting such data isn’t solely to do with subsidence. It is prudent housekeeping and particularly in terms of asset management and value. However, the figures are used to estimate the risk of trees in relation to subsidence and this study will hopefully be useful to the London Government when making their assessments.

CONCLUDING SNIPPETS

The following points of interest came out of our background reading for this study.

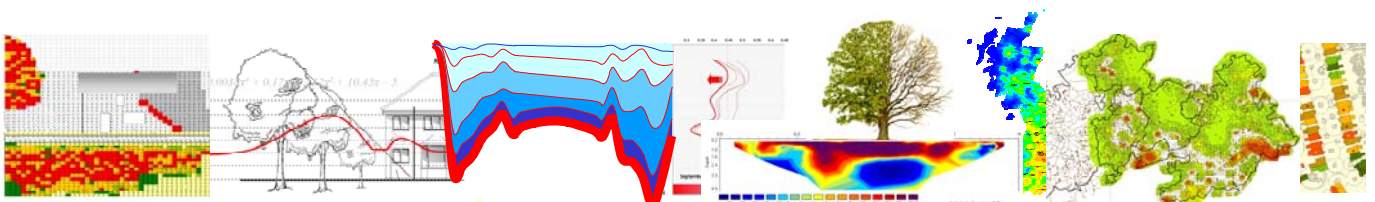
In “A Risk Limitation Strategy” (2007), the London Government confirm that, as a result of proactive tree pruning, claims fell by 18.5%. They go on to say “The survey showed that the 27 London boroughs that have instigated proactive cyclical pruning received 7364 claims in the past 5 years”.

What would be interesting would be a comparison with weather data. Have the Boroughs experienced a reduction in claims due to cyclical pruning, or simply due to more rainfall/less sunshine?

The London Tree Survey showed that the variety of species in streets is remarkably limited, with less than 10 species commonly planted.

The “Branching Out” report dated 2011 made a valuable point when, in section 4.12 it says “Disappointingly, four years on from our report there are still no data about street trees in the public domain. In this update we have sought to obtain street tree data from a number of groups who collect it. The LTOA and the GLA hold pan-London data, but we have found that they are unwilling to, or cannot release it because of concerns about its sensitivity.”

It does seem odd that data about public trees is so controversial that it is thought to be unwise to publish due to its sensitivity. Recent requests for data under the Freedom of Information Act have drawn mixed replies from Boroughs.

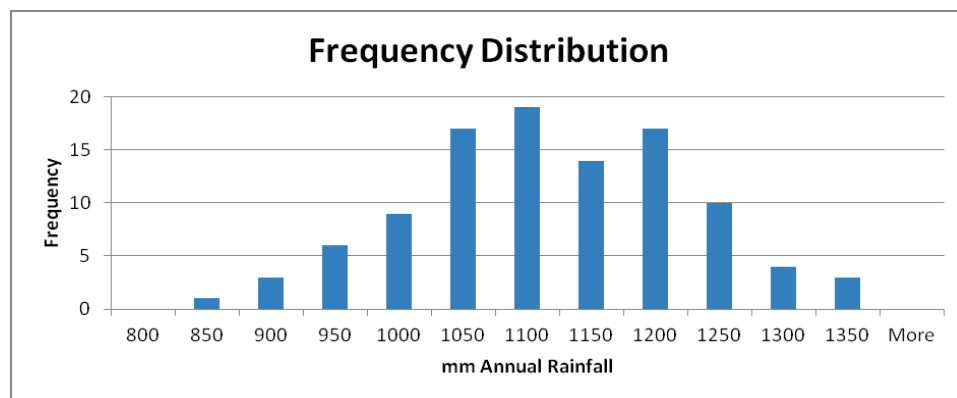


The Clay Research Group

Rainfall – Frequency Distribution

Cyril Nazareth

The annual UK rainfall distribution, taken from data published by the Met Office for the last 100yrs (1912 – 2012), is shown by the graph below:

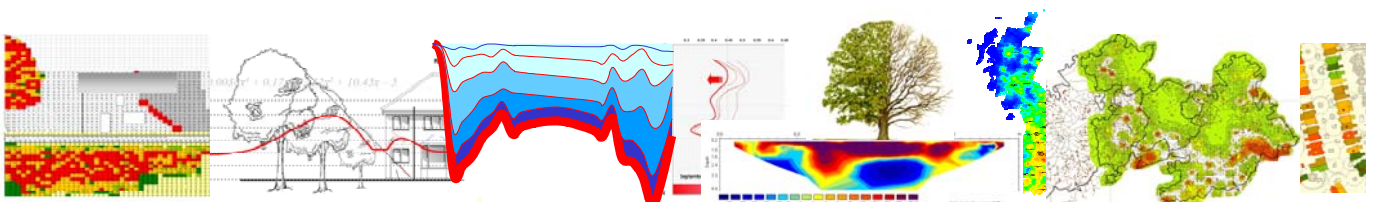


The graph divides the annual rainfall data over the last 100yrs into intervals and shows the number (frequency) of annual rainfall years that falls into each interval. It can be seen that the distribution is skewed slightly to the left, but that it appears to bear the general profile of a Normal Distribution.

The mean (average) rainfall over the period is around the 1100mm mark. Therefore the annual rainfall measured, that lies in both “tails” of the distribution has resulted in significantly dry weather (left tail) and significantly wet weather (right tail).

The years 1998, 1999, 2000 and more recently 2002, 2008 and 2012 will be found in the right tail of the distribution, whilst the years 1996, 2003 and 2010 will be found in the left tail. The remainder of the last 20yrs will lie somewhere in the “middle third” of the distribution.

In statistical terms, the above years can be described as significant rainfall events that can and do result in localised and sometimes more widespread flooding as well as droughts and resulting hose-pipe bans. The above distribution graph also suggests that these events are relatively rare in occurrence and therefore the chances of either are small but quantifiable.



The Clay Research Group



The Annual Subsidence Conference

Wednesday, 26th June, 2013

The conference is timely this year, nearly 12 months on from the landmark Berent case and **Anthony Davies** of Eversheds and **Jake Tibbetts**, Islington Council provide their views.

In July 2012 the Court of Appeal decision in *Berent v Family Mosaic Housing and London Borough of Islington* was hailed variously as the end of subsidence recoveries and no more than a restatement of the existing law.

A year after Berent, and with a rash of subsequent first instance decisions, are we any clearer as to the true impact?

Has it changed the way the industry views foreseeability? Will Local Authorities reduce the amount of preventative pruning, restricting their efforts to those cases where trees have been implicated by 'good' evidence? Jake Tibbetts of the LTOA provides his take on the position.

This session will explore how the decision has been applied in the lower courts and in the day to day cut and thrust of subsidence disputes.

Still on the topic of the legal impact on claims, Anthony Davies will also look at the world post-1st April 2013, which is described as the 'Big Bang' date for Lord Justice Jackson's reform of litigation funding.

Will lawyers be willing to take on smaller cases under a CFA? Or will the cost of litigation restrict recoveries to larger cases?

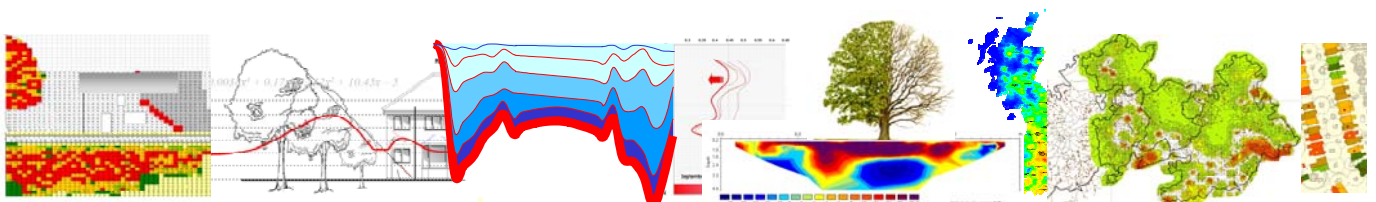
The end of recoverability for success fees and 'after the event' insurance premiums; costs budgeting; and damages based agreements all represent significant changes for those involved in subsidence litigation.

Anthony's session will summarise the key changes and explore the practical impacts that have emerged following 1 April 2013.

Moving on to the practical resolution of root induced clay shrinkage claims, we catch up with **Tom Clinton** who is studying for a PhD at Birmingham University. His topic is the stabilisation of clay soils using electrokinesis.

He feels that electro-kinetic soil stabilisation is a promising procedure for reducing the shrink/ swell potential of fine grained soils.

Tom's presentation provides an overview of the theory behind electro-kinetic stabilisation, factors that affect its performance such as voltage gradient, current density, electrode type and material, electrolyte type and treatment times, and then goes on to discuss approaches that may be adopted.





presents a One-day Conference on Wednesday 26 June 2013
at Aston University

DOMESTIC SUBSIDENCE Challenge and Change

- 09.00 - 10.00 Registration and coffee
- 10.00 - 10.15 Opening by Chairman: **RICHARD ROLLIT**, Innovation Group
- 10.15 - 11.00 "Litigation funding after Jackson- did the world change on 1 April 2013?" and "a year After Berent"- *What has been the impact?* **Anthony Davies**, Eversheds LLP
- 11.00 - 11.30 *A new soil suction test and research update.*
Clive Bennett, MatLab Limited, Soil testing Laboratory.
- 11.30 - 11.45 **Coffee**
- 11.45 - 12.15 *Berent - a London Tree Officer Viewpoint*
Jake Tibbetts, Islington Council
- 12.15 - 12.45 Discussion
- 12.45 - 14.00 **Lunch**
- 14.00 - 14.45 *New Technologies-Research Update*
Electrokinesis- Research Update, Tom Clinton, Ian Jefferson & John Peterson
- 14.45 - 15.20 *Landslide Hazard: Current Research at the British Geological Survey*
Katy Freeborough, British Geological Survey
- 15.20 - 15.40 **Tea**
- 15.40 - 16.15 *What does 20 years data tell us? Closing comments*
Richard Rollit, Innovation Group
- 16.15 - 17.00 Discussion
- 17.00 - 17.30 Tea & Disperse

(Directed by Stephen Plante, The Clay Research Group)

For conference availability: enquiries@astoncpdcentre.co.uk Telephone Enquiries: 0121 204 3606

Fax: 0121 204 5079 Website & Mailing Subscription: <http://www.astoncpdcentre.co.uk>

Our conferences are intended to contribute towards the CPD requirements of the relevant professional institutions.

The views expressed at the conference are personal to the speakers and are not necessarily those of Aston CPD.

Conference Organiser: Dr M Sadeghzadeh 07788947658

Please note the programme is subject to change without prior notice

.....
correspondence to: Aston CPD Centre, Aston House, 6 Greville Drive, Birmingham B15 2UU

Please reservePlace(s) at the course, (subject to terms & conditions) Domestic Subsidence- 26.6.13

Delegate Name(s): Company:

Address:.....

Post Code: Email Address: Tel:

Have you any dietary, access or other requirements? YES/NO if YES please state

Do you wish to be invoiced? (VAT exempt) YES/NO Purchase Order No:

Invoice address if different from above:

Cost £199 per delegate, VAT exempt, covering attendance, papers, lunch and refreshments during the day.

(Cheques should be made payable to Aston CPD)