The Clay Research Group

Issue 3 – January 2006

Professor William Powrie

We are very pleased indeed to welcome Professor Powrie to the Clay Research Group.

William Powrie is Professor of Geotechnical Engineering at Southampton University and a leading expert in the field of measuring negative porewater pressures in fine grained soils. He has joined our team to investigate how we might move water from one location to another, and reduce hydraulic conductivity at the same time. Perverse, but part of our wider review of how to tackle subsidence in an innovative way.

He tells us "we are at present monitoring a lightly vegetated highway slope near Newbury, and now have nearly two years' continuous data of soil suction/moisture content and climate data. We have developed a model that links climate and evapotranspiration to soil moisture deficit, and we have used the data to validate the model. We have now been applying predicted future climates, which suggests that by 2050 SMD's that were unusual in the past 20 years will be a daily occurrence."

Not only does the work he is involved with reflect our own needs, but his prediction going forward has particular significance in terms of climate change. Add the modelling aspect, and it is easy to see why we are so pleased to have him join us.

ASTON UNIVERSITY

Make a note in your diary – the 15th June. It is the subsidence conference hosted by Aston University, and we will be joining industry figures to outline our vision for the future.

The event attracts speakers from a cross section of adjusters and insurers, and the theme this year is how we harness technology to deliver improvements in service.

We will be represented by Hilary Skinner from the BRE, and hopefully at least one of the academics can be persuaded to speak.

Trees are Poisonous

An article in Nature tells us that trees are amongst the biggest producers of methane, the greenhouse gas. Biologists are scratching their heads wondering how they have missed this for so long.

Apparently, trees and vegetation produce one-third of the methane in our atmosphere. Quite a remarkable discovery.

It comes on top of the 2004 finding that …"Industry has dramatically cut its emissions of pollutants called Volatile Organic Compounds (VOC's), but those cuts have been more than offset by the amount of VOC's churned out by trees."

It would appear that many of our commonly held beliefs are being challenged. It certainly adds support to the view "chop them down. Don't plant any more".

Update

We have had a productive meeting with John Parvin in connection with our grant application, and prior to the meeting of the PCF on the 2nd February.

John was most helpful in steering us through the funding maze and asked some tricky questions – as you would expect. Hopefully we managed to provide sensible answers.

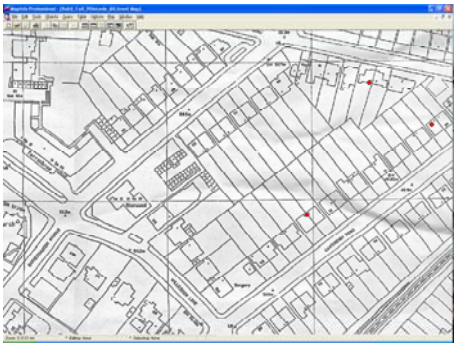
The modelling – the FEM package – is being dropped from the submission after discussions with William Powrie. Hopefully the existing models – the OSCAR and VISCAT style of application – can be validated as part of this project.

It is hoped that some of the expenditure can be treated as incurred costs against notified claims. This would reduce the sums involved considerably.

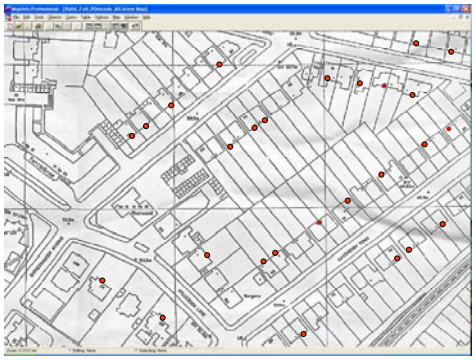
In the meantime, Paul Thompson of Marishal Thompson has approached the London Tree Officers in the hope of identifying parkland trees for our research. Finding a suitable site is a major problem, and this would be of great assistance.

Claims – a misunderstanding

When we look at a years worth of typical claims, things don't look too bad. The odd dot here and there as we can see from this sample taken from 40,000 claims. In fact, because of repudiations and so forth, this pattern more correctly represents 2 years worth of claims. We count 3 claims – see the red dots. Not bad.



The point is we are dealing with a fairly static landscape, and whilst trees grow year on year, and some are felled, the change in the landscape is as a result is small when compared to the largely mature stock of trees in North West London. Small trees take several years to mature, and felled mature trees pose a risk of their own. We are putting forward the view that the landscape is, for our purposes fairly static.



If we extrapolate the data over say 10, 20 or even 30 years, the true picture emerges. We can immediately see the flaw in the "six identical trees in front of six identical houses, and why is it, only 3 are damaged" sort of argument people use to discredit models. We see trees are actually time bombs, and they go off in differing years.

Above we have plotted 28 dots. 20 years claims experience, excluding event years. It's a very different picture indeed and we get a better understanding of the risk we face. This is why we keep seeing claims, despite felling trees and despite underpinning.

Root induced clay shrinkage claims are related to vegetation by definition. The argument that there are 100m trees in the UK is flawed and seriously mis-represents the problem. There may be this number, but we need to concentrate on how many trees are on clay soils, and situated within influencing distance of properties.

In summary, trees are a problem and statistically we can prove that to be so. On the other hand, the problem is definable. It isn't beyond managing.