



## Trees and Subsidence – understanding the issues, balancing the solutions, reducing future problems

Held online on 9<sup>th</sup> March in association with the Institution of Structural Engineers.

### Meeting chat

#### Apologies!

Sue James – I must start by apologising for the interruption when Keith and I were trying to work out why his Zoom limit had suddenly stopped at 100 and people were unable to get in. We are making sure that this is rectified for future events!

The presentations and the recording of the full session can be found here:

<https://www.tdag.org.uk/past-events.html>

#### Summary

This was the first rather than the last word on 'trees and subsidence' and, as such, it was useful for identifying issues that need to be resolved and what the 'next steps' should be.

Clearly there are two very different scenarios:

- (1) What to do for new developments to avoid subsidence issues of low-rise buildings on shrinkable soils.
- (2) How to assess the risk and prioritise the retention of healthy, mature trees even if implicated in subsidence cases by assessing tree value versus alternative solutions.

There was a call for clarity on facts and figures.

The role of 'insurance' and its impact on trees both existing and proposed.

The need for robust adopted tree strategies embedded in local plans which would also provide developers with what is required of them so that they can build costs in before agreeing land purchase price and so reduce too much discussion with conditions and viability.

**The chat below relates to the issues being discussed and it has been ordered to try to put responses alongside the original points raised.**

Alexandra Szentkuti:

This is just a technical question (for Tim Farewell) - I see you are using the rcp scenarios, are you planning to update with ssp's after the model runs are more certain?

- Dr Tim Farewell:  
Replying to "This is just a technical question..."  
As I mentioned - more detail is always welcome - unless it comes at the expense of decisions and action now. The trajectory even for the bestcase scenario is such that we in the UK will be dramatically affected by climate change. Other countries

will have it much worse. So.... Yes, new models always welcome, but companies, governments and us as individuals need to take action now to identify the coming risks. Also, we need to identify what each one of us can do to reduce our own impacts - and encourage others to do likewise.

Giovanna Iozzi:

It will be much sooner than the end of the century as the climate scientists attest - the insurance industry can't possibly fell all the trees on our streets, change is definitely needed. How will they approach mature trees?

There are two big twin changes - deforestation stops and transition from fossil fuels.

Sue James:

Question for John: for new build are developers careful enough in their investigations of below ground before development?

Si:

Are there any figures to show the number of vegetative and non-vegetative subsidence claims?

- Sarah Dodd:  
Replying to "Are there any figures..."  
That's a great question. I know that the Association of British Insurers has data on the number of claims but they are all bundled together as 'domestic subsidence' so will include tree root induced subsidence and other claims such as subsidence from leaking drains
- Jon Heuch  
Replying to 'Are there any figures...'  
Yes, various presentations over time, but the figures you seek are dependent on weather so annual variations
- Sarah Dodd:  
I think it's more about the contractual situation with insurers and their customers

Alex Plummer:

Are poor foundation depths an argument against tree removal in tree related subsidence claims cases?

- Sarah Dodd:  
Replying to "Are poor foundation ..."  
That's a complex questions Alex. It can depend. Often shallow foundations mean that the insurer doesn't accept the claim when crack damage occurs

Giovanna Iozzi:

Insurers are quick to blame mature trees rather than paying for work on houses. as John says it's more soil than trees.

Stewart Marshall:

As a local authority officer: We get a number of enquires stating that insurance providers will not insure a property because of a tree near the property, irrespective of past history for the site, road, area

Jon Thomas:

Is there a lower incidence of subsidence damage in traditional buildings?

- Dr Tim Farewell:  
Replying to "Is there a lower inc..."  
It really depends on what you mean by "traditional". But certainly, some decades have houses which were far worse than others! The transition to modern mortar made some walls less flexible for example.
- Keiron Hart:  
Replying to "Is there a lower inc..."  
If you normalise claims data over the number of houses built during specific time periods the properties at greatest risk are those built <1900 - 1920, then it's those between 1940-50, then 1930 - 1940, from 1950 onwards the risk generally declines. This doesn't account for extensions and conservatories.....

Moray Simpson:

Developers wont plant large growing species with a high-water demand near new builds on sites with shrinkable clay soils These are the type of trees that we require in the new built environment to mitigate against the worst effects of climate change! How do we get large growing trees planted?

Dr Tim Farewell:

Some suggest that 70% of subs claims (historically) have had some trees involved in some manner. Not always the key trigger of course.

Jane Leggett:

Is there information about the percentage of trees which survive mass planting - especially in drought conditions?

Giovanna Iozzi:

There's a lot of focus on new planting - but we are losing so many veteran ones - those in Euston square of 200 years old were felled pointlessly for a taxi rank for Hs2 last few years. What about tighter protections for existing trees?

- Sarah Dodd:  
Replying to "There's a lot of focus..."  
The Woodland Trust is doing some work to secure increased protection for ancient and veteran trees.
- Mark Chester:  
Replying to "There's a lot of foc..."  
They have been working on this for the past decade...any progress?

Dealga O'Callaghan:

Does the tree planting guidance take account of the 3-30-300

Rick Edwards:

It would seem to me, short term we can't really change the climate (rainfall), we can't control the soil, it is expensive and disruptive to modify the building so the easy option is "deal with the tree". I've seen this old tree, old buildings and a geology millions of years old, not causing an issue, then one year, cracks appear and there are immediate calls to remove the tree.

Glenys E. Law:

When is the Duty to consult coming in?

- Darren Sharpe:  
Duty to consult- How do we address the issue of claimants not wishing to have evidenced published owing to it breaching the Data Protection Act?
- Jim Smith Forestry Commission:  
@Darren. The local authority doesn't need to publish all the evidence in subsidence cases. Elected officials and the public need to be reassured that the evidence presented adequately proves causation. As Sarah Dodd has highlighted.

Giovanna Iozzi:

Where does the 5% figure come from? I thought insurers only have to prove tree was a 'contributory' factor

- Martin Dobson:  
Replying to "where does the 5% figure..."  
It more like <1%. It's balance of probabilities rather than proof.
- Sarah Dodd:  
Replying to "where does the 5% fi..."  
Perhaps for the mitigation request for tree removal but in order to succeed in recovering damages, the tree has to be the primary cause and the Claimant has to be able to satisfy the 'but for' test. That's a legal test which says 'but for the tree, the damage would not have occurred'
- Keiron Hart:  
Replying to "where does the 5% figure..."  
The % figure is even where you have lots of trees and properties only a very (very) small % of these properties are ever likely to experience vegetation related subsidence. In terms of 'site investigations' to 'prove' its tree related the biggest single indicator that it is vegetation related movement is the timing of onset of damage, no soil testing, no root ID, no monitoring....
- Julian Glaser:  
Replying to "where does the 5% fi..."  
@Sarah Dodd What counts as evidence of 1ry cause? Typically, insurers demonstrate that tree roots are present under foundations in bore holes. Is this conclusive evidence? What precedents are there that can be quoted?
- Sarah Dodd:  
Replying to "where does the 5% fi..."

This has to be evidence from your experts. Experts need to reach a conclusion on whether, on the balance of probabilities 'but for' the tree the property would not have cracked.

Moray Simpson:

Developers won't pay for deeper foundations to cope with new tree planting. The thin red line is the LPA and that line is very thin in a lot of LPAs.

- Stewart Marshall:  
Replying to "Developers wont pa..."  
In a three-tier authority the highway authority doesn't get to see landscape plans, the plans are frequently dealt with as a discharge of conditions.

Dr Tim Farewell:

Like Jim (Smith) - We need councils to be more empowered to stick to their positions about good design - and not worn down by the constant back and forth. I've spoken with

a number of developers - all keen to be "more sustainable" but don't want to knock profit margins when their competitors are not also doing it. Some are even privately hoping for more legislation so they can make the changes they know they need to make.

Paul Casey MICFor:

Soil movement will only occur if you have a shrinkable soil type – unless you have that on site already then presumably it won't matter what your water demand tree species is at the design stage? Further, you're also introducing, or should be, an appropriate soil volume and type on to new development sites for all new trees such that it supports each new tree to maturity. Again, presumably you won't be stipulating a shrinkable soil type as part of that process!

Jon Heuch:

Is the alternative to tree removal to pump lots of concrete (CO2!) under the foundations? Is there a need to educate the public as to what the alternatives are in subsidence cases?

- Moray Simpson:  
Replying to "Is the alternative..."  
Maybe we should be calculating the carbon cost of underpinning VS the carbon cost of tree retention. However, carbon capture and storage is only one ecosystem service benefit that trees provide, so maybe an i-tree eco calculation of the trees ecosystem service benefit worth vs underpinning costs would be a better calculation.
- Jon Heuch:  
Underpinning is not a panacea...how many partially underpinned houses suffer from subsidence
- Martin Dobson:  
A typical underpinning scheme can include a carbon cost of more than 6000 kg CO2. A typical tree might capture between 15-40kg CO2 per annum.
- Moray Simpson:  
Replying to "A typical underpin..."  
So, if you get 150 years the carbon cost is then equalised by the tree that captures 40kg CO2. However, this only takes into account carbon and not the many other benefits that trees provide.
- Jon Heuch:  
In reply to "Maybe we should be calculating the carbon cost..."  
Partial underpinning is expensive! Underpinning a whole house is very expensive. And disruptive, unless you want to put all your belongings in storage for 6 months, find alternative accommodation etc, etc
- Dr Tim Farewell:  
Replying to "Maybe we should shou..." This is a good point - there are hidden costs.
- Sarah Dodd:  
Replying to "A typical underpinni..."  
CO2e of a tree such as an Oak stored at maturity is 7500kgs so it can be a close balancing act in lots of cases.
- Martin Dobson:  
Replying to "A typical underpinni..."

If all tree-related subsidence cases were to involve underpinning (at a cost of around £30,000 to insurers) rather than tree removal (essentially free to insurers) then the cost would be around £720 million per annum to insurers (and to their policyholders). This would result in a very significant, and possibly unaffordable, rise in insurance premiums for properties on shrinkable clay soils.

- Giovanna Iozzi:  
Insurers make billions in profits - 720million is a drop in the ocean. They need to change their approach or we will increasingly lose most of our mature trees as everything gets hotter.
- Jon Heuch:  
Where does insurers money come from? Us?
- Martin Dobson:  
Total UK insurance market is valued at around £56 billion and profits are somewhere between 2 - 10%, i.e. £1.12 - 5.6 billion, so the cost of £0.72 billion would cause a significant dent in profits, or a rise in premiums.
- Dr Tim Farewell:  
Replying to "Total UK insurance m..."  
I think I agree - this is not a high margin business (household insurance). Home building is much more so!

Martin Dobson:

Unfortunately, shallow foundations is no defence for a tree owner as 'the tree takes its victim as it finds it'.

- Sarah Dodd:  
Replying to "Unfortunately, shall..."  
The egg shell skull rule does apply however, if the foundations are so shallow there can be a foreseeability issue in that that any risk of the tree causing damage to the property would have been unforeseeable as the tree owners could not have known the foundations would be that shallow.

Elton Watson:

Lapsed pruning cycles of street trees due to budgetary pressures is increasing claims

Si:

The previous local authority I worked for had a very good/robust replant policy, although we averaged 10-15 related claims per year. We normally found where a tree was implicated it wasn't always worth saving due to species and location within the highway and it give an opportunity to replant with a different species and it helped give better succession/age range etc

Elton Watson:

Great to have community tree groups involved in the presentation, gives a different perspective.

Jon Heuch:

There are 205,000 TPOs in England and they are in a mess...Read the GLA's ChainSaw Massacre for the numbers. Subsidence really is a small factor in tree removal.

Charles Bennett:

Reversing the TPO process has been discussed before in the Batho Report but the idea was dismissed.

Keiron Hart (Tamla Trees):

As an ex-tree officer, you need TPO's to protect the trees genuinely worthy of it because that way you can take a case effectively to court for a breach. If TPO's extended to all trees and there was a breach and the council had to prosecute it would, in my opinion, devalue the system because judges will not criminalise people for breaches on what could be shown to be a 'lesser' tree. Councils struggle presently to deal with the TPO applications they have. A TPO on all trees cannot be enforced and would lead to an enormous administrative burden.... A huge uplift in council funding would be needed to do this and that seems highly unlikely...

Sue James:

Glenys - can you post the link to the petition.

Giovanna Iozzi:

We have asked our council many times to join it (Joint Mitigation Protocol) - Haringey - but they won't. Wonder why not?

Giovanna Iozzi:

They often say insurance evidence is 'commercially sensitive' and can't share it

Keiron Hart:

The biggest hurdle to the JMP was the councils that signed up to it who said they would respond within X days and they would never do so. It's a resource issue (again), great protocol but the aim was to shorten claim durations and focus site investigations on the claims that genuinely needed it but if those Councils who have signed up to it won't follow the timelines.....

Elton Watson:

Most cases are settled before getting anywhere near court

- Sarah Dodd  
Replying to "Most cases are settl..."  
That is right. Litigation is very expensive so parties are encouraged to resolve cases before they get to trial. Whilst I would promote things such a mediation to settle cases, it does have a knock-on effect on reducing the amount of case law produced for precedent effect

Keiron Hart:

Any tree removal is regrettable but...The number one species of tree removed for subsidence claims is a relatively small Cypress tree located within the insureds own garden...

Giovanna Iozzi:

Deregulation happened in 2012 and has been deregulated ever since. Interesting what Tim is saying about developers wanting more guidance.

Giovanna Iozzi:

Our planning dept is very powerful at Haringey and yet seem to care very little for mature trees.

Mostly they're seen as a nuisance and to be felled immediately

a07301:

Appears developers are a much bigger problem than insurers following this thread. How many mature trees are removed by Insurers? Would be good to understand the size of the problem.

- Martin Dobson:  
In 2022 there were about 24,000 insurance claims. About 40% of subsidence usually relates to shrubs rather than trees.
- Jon Heuch:  
Replying to: "Appears developers are a much bigger problem..."  
If you're going to try to build 300,000 houses a year then, inevitably, you're going to have a bigger impact than a few thousand insurance claims, only a proportion of which involve large mature trees.

Giovanna Iozzi:

What are the key new guidance documents our authority should be aligning with - other than the Joint Mitigation Protocol?

Martin Dobson:

Trees can be valued using a system called CAVAT (Capital Asset Value of Amenity Trees)

charrison1:

Replying to "Trees can be valued ..."

East Devon District Council have used CAVAT in tree subsidence claims.

Sue James:

@Charrison...do you have information on how this has worked in practice?

Sarah Dodd:

The last insurance conference about subsidence was in March of this year. The environment was front and centre of the agenda so it is being discussed

### **Minister Harrison**

You may be interested to read Hansard on the Adjournment Debate on Urban Trees in Parliament on 10<sup>th</sup> May 2023:

<https://hansard.parliament.uk/commons/2023-05-10/debates/14658436-4FC8-49B1-A35A-9C5E6059A83D/UrbanTreesProtection>

### **Books and references**

NHBC documents:

*Building Foundation Solutions – Future Proofing Against Climate Change* (February 2023)  
<https://www.nhbc.co.uk/foundation/future-proofing-against-climate-change>

*Efficient design of piled foundations for low-rise housing. Design Guide*  
<https://www.nhbc.co.uk/binaries/content/assets/nhbc/foundation/efficient-design-of-piled-foundations-for-low-rise-housing.pdf>

*A simple guide to Sustainable Drainage Systems for housing.*  
<https://www.nhbc.co.uk/binaries/content/assets/nhbc/foundation/a-simple-guide-to-sustainable-drainage-systems-for-housing.pdf>

*Operational and embodied carbon in new build housing. A reappraisal.* (2016)  
<https://www.nhbcfoundation.org/wp-content/uploads/2016/05/NF34-Operational-and-embodied-carbon.pdf>

NB. There is an increasing body of work about embodied and operational carbon in buildings. For example, the work of -

- LETI: <https://www.leti.uk/>
- Net Zero Carbon Buildings Standard: <https://www.nzcbuildings.co.uk/>

Documents currently being revised:

- Revision of London Tree Officers Association's *Risk Limitation Strategy for Tree Root Claims*
- Revision of *The Joint Mitigation Protocol (JMP)*
- Revision of Institution of Structural Engineers document *Subsidence of Low Rise Buildings*.

**Summary of SHIFT's demands:**

1.Parliamentary Select Committee to investigate and remedy the problem of Insurance/Subsidence/Trees

2.ATree Preservation Act in parliament: to implement the promises of the England Trees Action Plan.