

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
Artificial Intelligence



December 2025

Issue 247

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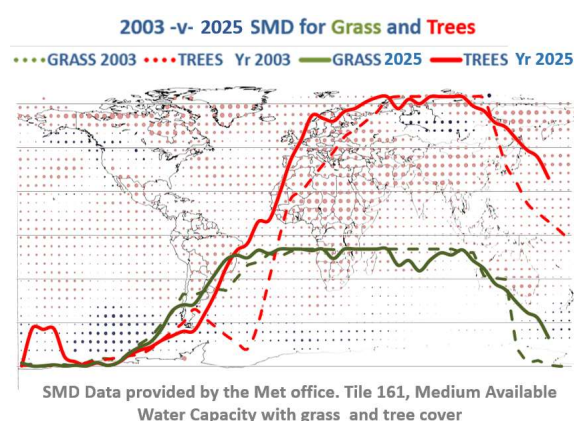
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Plotting the correlation between the Soil Moisture Deficit for a surge year (2003) and the current year.

Contributions Welcome

We welcome articles and comments from readers. If you have a contribution, please Email us at: clayresearchgroup@gmail.com

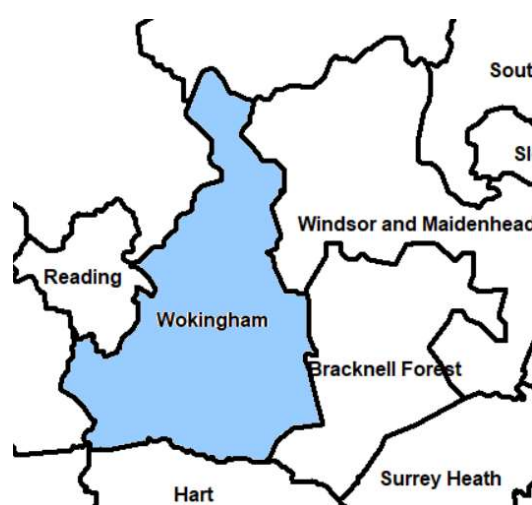
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District and Sector Risk

Wokingham Borough is situated in Berkshire with an area of around 179km² and a population around 177,500. It is the subject of the 'Risk by District' series in this month's edition. Its geology comprises small areas of drift deposits overlying shrinkable clay – see Page 8.



The risk maps are built from a data sample covering four claim years, including one surge and three 'normal' years.

AI - ?

We would welcome thoughts from readers regarding the response of ChatGPT to queries raised in recent newsletters.

Would the data be useful when handling claims, and was the information accurate? Does it threaten the roles of employees or is it best regarded as a means of support?

On the following page we ask "What is the average cost of repairing a house damaged by subsidence in England?". The response includes values for a range of optional repairs and the reference source.



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ChatGPT – cost of repairing subsidence

Question to ChatGPT

What is the average cost of repairing a house damaged by subsidence in England?

Response

What Does It Typically Cost?

Here are some average cost ranges (or common estimates) for subsidence repair in the UK / England:

- According to Mainmark, the average cost to fix foundation subsidence is about £14,000 for a 3-bed semi-detached house. [mainmark.co.uk](https://www.mainmark.co.uk)
- Subsidence repair (underpinning) using mass concrete: ~ £13,000 for a typical 3-bed home. [mainmark.co.uk](https://www.mainmark.co.uk)+2[mainmark.co.uk](https://www.mainmark.co.uk)+2
- Piling underpinning (deeper support) can cost ~ £23,000 for similar-sized properties. [mainmark.co.uk](https://www.mainmark.co.uk)+1
- Resin injection (a less disruptive option) might cost around £7,500 for a 3-bed house. [mainmark.co.uk](https://www.mainmark.co.uk)
- According to MyJobQuote, typical subsidence repair costs are £5,000 to £15,000, though very severe cases can go up to £50,000. [MyJobQuote](https://www.myjobquote.com)
- On top of the structural repair, cosmetic repairs (plastering, decorating) often cost £2,000–£10,000. [My Homebuyers](https://www.myhomebuyers.com)

Key Factors That Affect Cost

Some of the main variables that influence the cost include:

1. **Severity of Subsidence:** How much the building has moved, and how many walls / foundations are affected.
2. **Method of Repair:**
 - Mass concrete underpinning
 - Piling
 - Resin injection

Each has very different cost profiles. [Checkatrade](https://www.checkatrade.com)+2[mainmark.co.uk](https://www.mainmark.co.uk)+2
3. **Size / Type of Property:** A 2-bed terrace will cost a lot less than a large detached house. [HomeHow](https://www.homehow.co.uk)+1
4. **Additional Work:**
 - Structural surveys (engineer fees: ~£80–£120/hr, per [Checkatrade](https://www.checkatrade.com)) [Checkatrade](https://www.checkatrade.com)
 - Tree removal / root management if trees caused the subsidence. [MyBuilder](https://www.mybuilder.com)
 - Drainage or gutter repairs. [HomeHow](https://www.homehow.co.uk)+1
 - Internal repairs: plastering, redecoration, brickwork, etc. [bettermove.co.uk](https://www.bettermove.co.uk)+1



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5. **Location:** Costs can be higher in London / South East vs other parts of the UK. readysteadysell.co.uk
6. **Monitoring:** Sometimes after the repair, ongoing monitoring (e.g. for a year) is needed — this can cost £500–£1,500 pa. My Homebuyers

✓ My Estimate: “Average” Cost

Putting all that together, for a *typical UK / English house* (say, a 3-bed semi), a **reasonable “average” cost** to repair subsidence (structural underpinning + damage repair) is likely in the **£10,000–£20,000** range in many cases.

Recent Data (2024–2025) on Subsidence Repair Costs

1. Underpinning (Structural Repair)

- According to Checkatrade, the average cost for underpinning to fix subsidence is about **£12,500**.
- Mainmark (a specialist company) gives these rough average figures for a typical 3-bed house:
 - Mass concrete underpinning: ~ **£13,000**
 - Mini-piling: ~ **£23,000**
 - Resin injection: ~ **£7,500**
- PriceYourJob estimates underpinning per m²: resin ~£1,200/m²; mass concrete ~£1,500/m²; mini-piling ~£2,500/m².

2. Additional / Associated Costs

- Structural engineer (survey) cost: Checkatrade gives **£80–£120/hour**, and survey total ~ **£625–£1,725** depending on complexity.
- MyBuilder reports: resin injection costs ~**£150–£300 per m²** for ground stabilisation.
- MyJobQuote notes that underpinning for a 3-bed terraced house (mass concrete) is about **£12,000–£14,000**, while for mini pilings it can be **£22,000–£24,000**, and resin injection ~**£10,000–£12,000**.
- Other costs (e.g. tree felling if roots caused subsidence): can range (per MyJobQuote) from ~ £150 up to £1,000+ depending on the size of the tree.
- There may also be costs for monitoring post-repair and any internal cosmetic work (crack repair, plastering, decorating).

3. Insurance / Claims Context

- According to the ABI, in the first half of 2025 insurers paid out on subsidence-related claims with an **average payout of ~£17,264** per claim.
- This suggests that many real-world cases involving insurance are fairly significant — not just very minor subsidence.



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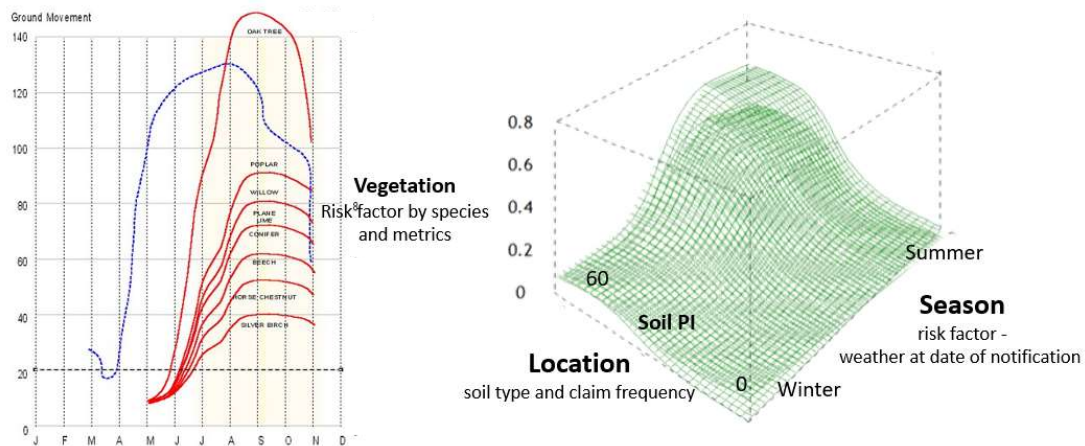
Estimated “Average” Cost (2025)

Putting together these recent data points, a **reasonable “average” repair cost in England for subsidence now** (for a typical moderate case) is likely around:

- **£10,000–£20,000** for underpinning + ground stabilisation, assuming a 2–3 bed house and a standard repair method (e.g. mass concrete or resin).
- On the lower-end (if resin injection is feasible) might be closer to **£7,500–£12,000**.
- On the higher side (deep underpinning / piling, or large properties) could go over **£20,000**, depending on complexity.

AI and Claims Handling

Page 5 of Issue 246 plotted in graphical form the data associated with an AI system, taking account of the individual elements including claims experience, geology, weather conditions, modelled root overlap, tree metrics (species, height, distance from building) and age of the property.



Above, right, an extract of how the model deals with trees by taking into account weather by season at the time of notification, soil type and the risk presented by tree species, tree height and distance from the building – something resolved by the graph on the left.

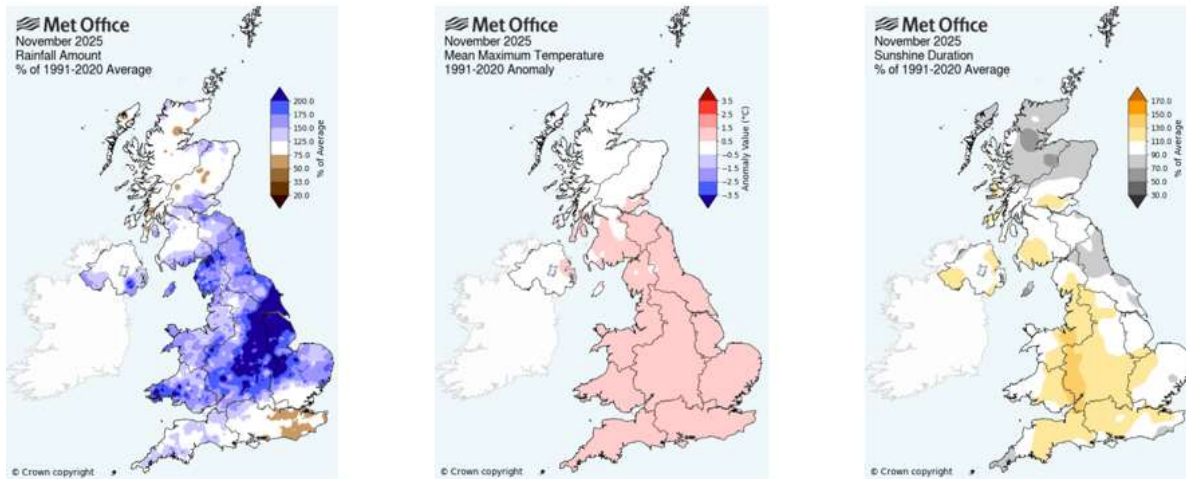
All factors are then combined within the model, taking into account the fact that the various elements listed aren't infallible, as we shall see in a later review.



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Met Office Anomaly Maps for November 2025

Anomaly maps from the Met Office web site for the month of November 2025 comparing data with the 1991 – 2020 average, reproduced below.



The maps reveal increased rainfall, a slight increase in mean maximum temperature across most of the UK and increased sunshine duration to the south and a decrease to the north compared with 1991 – 2020 averages.

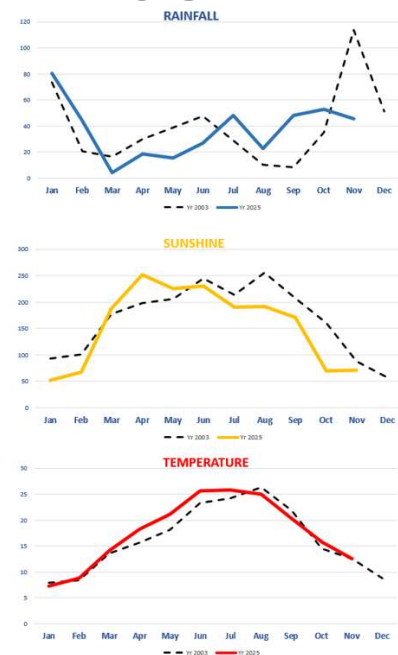
<https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-actual-and-anomaly-maps>

Weather - Change by Month 2003 – v - 2025

Right, charts plotting data provided by the Met Office from the Heathrow weather station for rainfall, sunshine and temperature all plotted against profiles for 2003 - a surge year. When claim numbers for 2025 are available, will we be able to trace a correlation?

This year, rainfall was below 2003 values until July and sunshine peaked in April. Temperatures were higher from February to July. Weather in 2003 is interesting – rainfall dipped in August and September, sunshine and temperature increased.

Claim numbers early in 2025 suggested a surge was likely. If numbers turn out as average, then the hope of developing an early warning system reduce. ABI data should be available in February 2026.



Borough is situated in Berkshire with an area of around 179km² and a population around 177,500.

Distribution of postcode sectors and housing stock using full postcode as a proxy. Each sector covers around 3,000 houses on average across the UK and full postcodes include around 15 – 20 houses on average, although there are large variations.

From the sample we hold, sectors are rated for the risk of domestic subsidence compared with the UK average – see map, right.

Using a frequency calculation (number of claims divided by private housing population) the relative risk across the borough at postcode sector level is revealed, rather than a 'claim count' value.

Sector risk compared to UK average from the sample analysed.



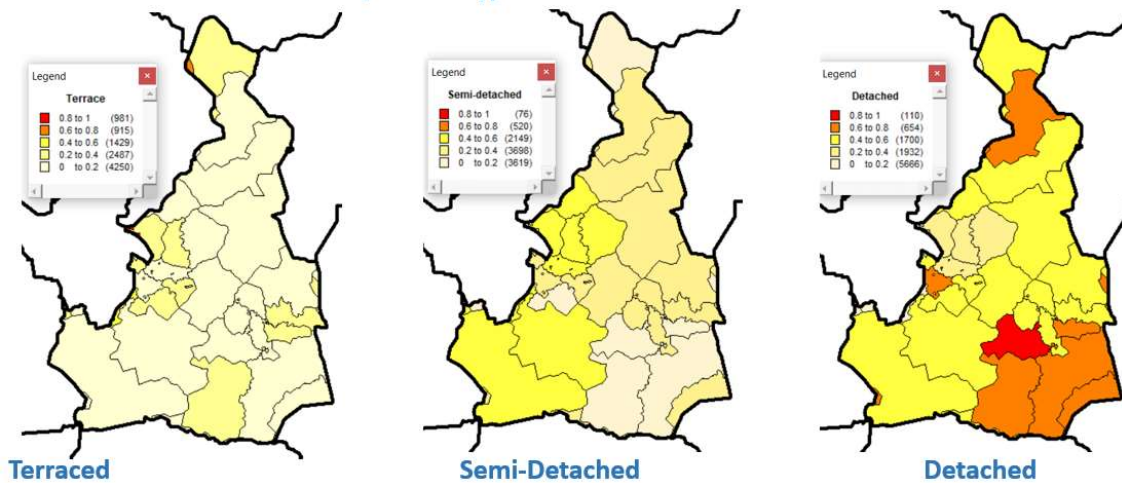
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Wokingham - Properties by Style and Ownership

Below, the general distribution of properties by style of construction, distinguishing between terraced, semi-detached and detached. Unfortunately, the more useful data is missing at sector level – property age.

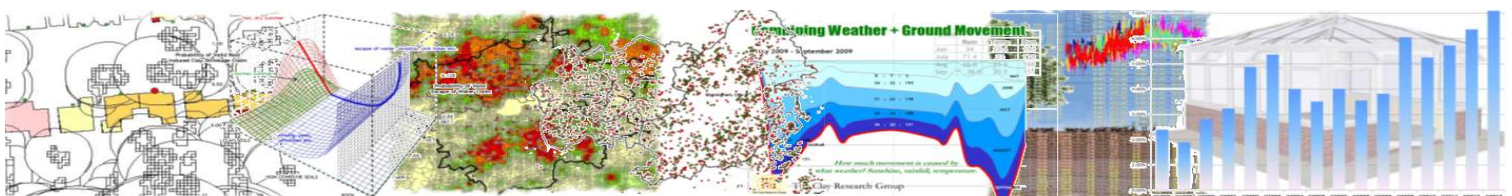
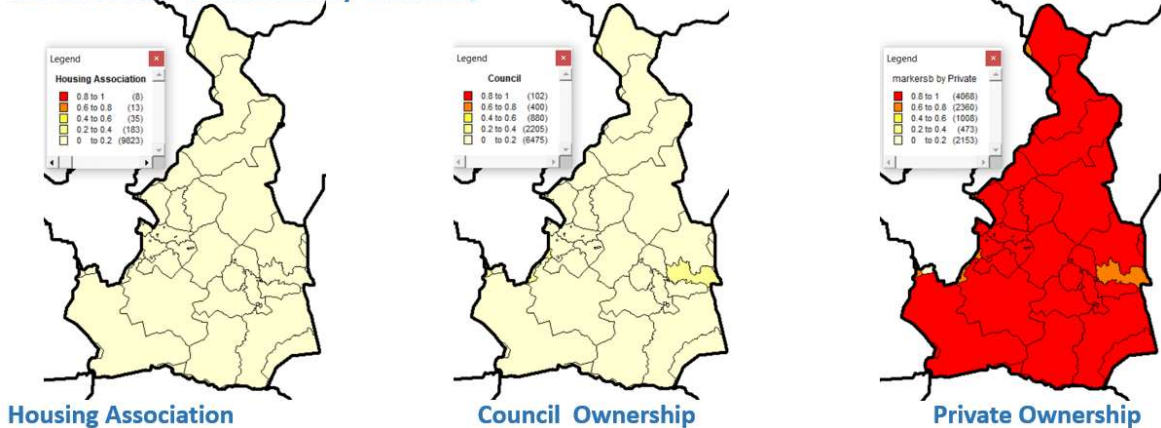
Risk increases with age of property and the model can be further refined if this information is provided by the homeowner at the time of taking out the policy.

WOKINGHAM - Distribution by House Type



Distribution by ownership is shown below. Detached, private properties are the dominant class across the district.

WOKINGHAM - Distribution by Ownership



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Subsidence Risk Analysis – Wokingham

Below, extracts from the British Geological Survey low resolution 1:625,000 scale geological maps showing the solid and drift series. View at:

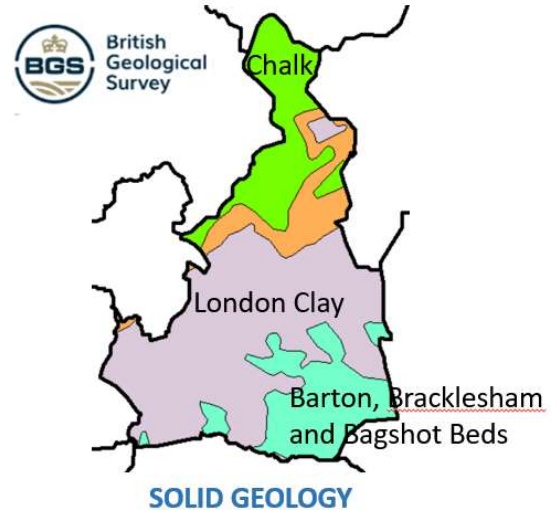
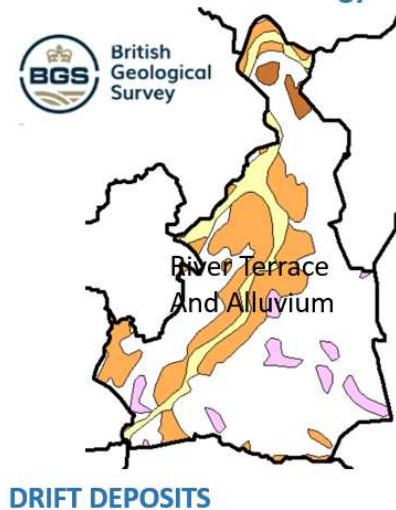
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

See page 11 for a seasonal analysis of the sample which reveals that, at district level, there is around a 70% probability of a claim being valid in the summer and, of the valid claims, there is a 70% probability that the damage will have been caused by clay shrinkage.

In the winter, the likelihood of a claim being valid is around 60% and of the valid claims, escape of water accounts for over 70%.

A postcode sector map on the following page records the PI of soils retrieved following site investigations from actual claims.

WOKINGHAM: BGS Geology – 1:625,000 scale



Above, extracts from the 1:625,000 series British Geological Survey maps. Working at postcode sector level and referring to the 1:50,000 series delivers far greater benefit when assessing risk.

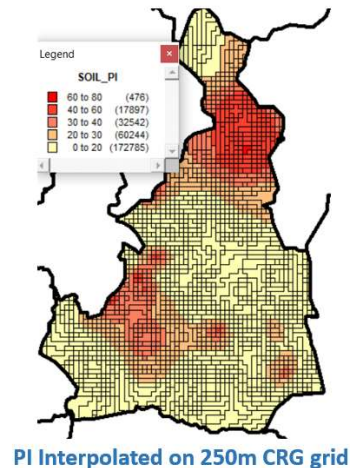
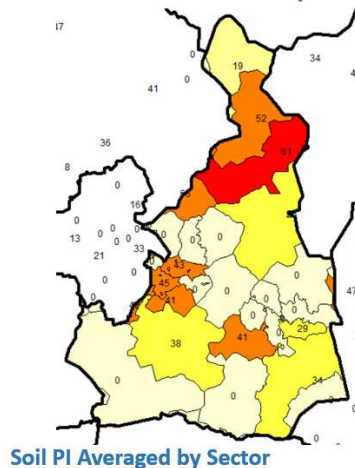


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Liability by Geology and Season

Below, the average PI by postcode sector (left) derived from site investigations and interpolated to develop the CRG 250m grid (right), both confirming the varied geology across the district.

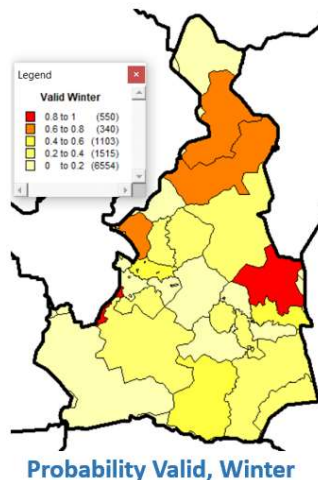
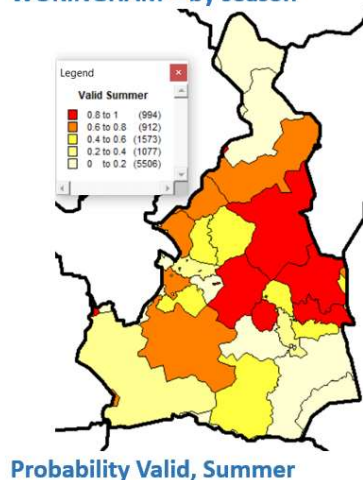
WOKINGHAM – Soil Plasticity Index



Zero values for PI in some sectors may reflect the absence of site investigation data - not necessarily the absence of shrinkable clay. A single claim in an area with low population can raise the risk as a result of using frequency estimates.

The maps below show the seasonal difference from the sample used. Combining the risk maps by season and reviewing the table on page 11 is perhaps the most useful way of assessing the potential liability, likely cause and geology using the values listed.

WOKINGHAM – by season



A high frequency risk can be the product of just a few claims in an area with a low housing density of course and claim count should be used to identify such anomalies.



WOKINGHAM - Subsidence Risk Relative to UK

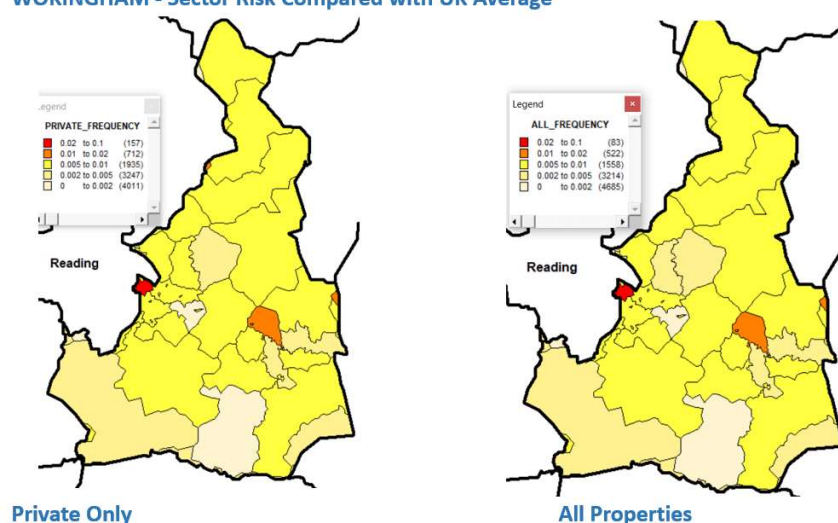


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Wokingham - Frequencies & Probabilities

Below, mapping the risk of subsidence by ownership. Claims frequency that includes council and housing association properties delivers a misleading value of risk as they self-insure. The following show the normalised risk, taking account of the private housing population – that is, the rating compared with the average value for each category.

WOKINGHAM - Sector Risk Compared with UK Average



To reiterate, a reversal of rates for valid-v-declined by season is a characteristic of the underlying geology. For clay soils, the probability of a claim being declined in the summer is usually low, and in the winter, it is high.

In this case, the numbers reflect the presence and influence of the underlying clay series.

Liability by Season - WOKINGHAM

	valid summer clay	valid summer EoW	Repudiation Rate (summer)	valid winter clay	valid winter EoW	Repudiation Rate (winter)
District						
Wokingham	0.499	0.199	0.302	0.17	0.43	0.401

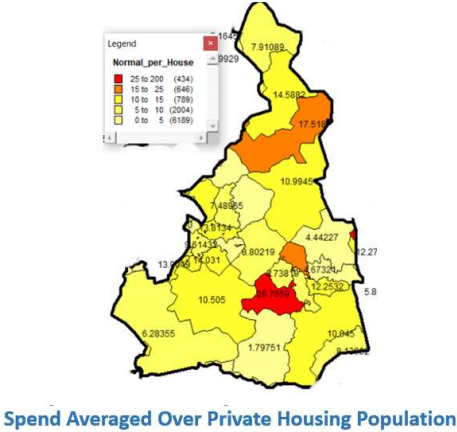
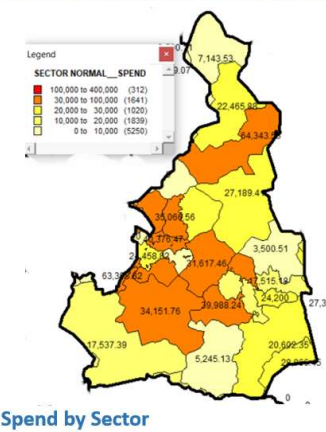


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Aggregate Subsidence Claim Spend by Postcode Sector and Household in Normal & Surge Years

The maps below show the aggregated claim cost from the sample per postcode sector for both normal (top) and surge (bottom) years. The figures will vary by the insurer's exposure, claim sample and distribution of course.

NORMAL YEAR SPEND – WOKINGHAM



The images to the left in both examples (above and below) represent gross sector spend and those to the right, sector spend averaged across private housing population to derive a notional premium per house for the subsidence peril.

In this case, the absence of any distinct difference between surge and normal years reflects the geology.

SPEND in SURGE – WOKINGHAM

