

# The Clay Research Group

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## 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



May 2018  
Edition 156

# The Clay Research Group

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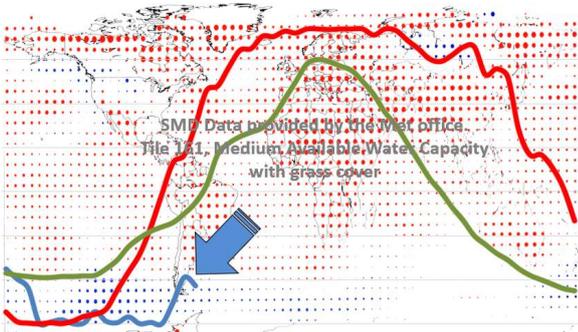
## General Data Protection Regulations - GDPR

The regulations protecting the use of private data come into force on the 25<sup>th</sup> May, 2018. The CRG do not share or distribute Email addresses from our circulation list or data that can be traced back to individuals but as a precautionary measure we will no longer Email members advising them of the uploading of future editions, but instead would ask that you either (a) 'opt in' by requesting updates by Email or (b) upload the latest editions of the newsletter from the CRG web site. They are usually available around the 10<sup>th</sup> of the month.

## SMD Update

A particularly wet winter with minor drying in the south east resulting in a deficit of around 20mm.

Current SMD plotted against Event and Normal Years



No sign of any change in the near future as we see from the Met Office on Page 9.

## Subsidence Forum Diary Dates

- Thursday 17th May - Subsidence Forum Annual General Meeting (all members).
- Thursday 17th October - Subsidence Forum Training day (members & non-members).
- Friday 23rd November - ASUC Awards (members & non-members).

The Subsidence Forum dissertation award will continue in 2018, offering a cash prize of £500 for the best undergraduate final year dissertation.

## BGS

May 5<sup>th</sup> to the 13<sup>th</sup> GeoWeek. The BGS arrange fieldwork at different sites across the UK to introduce members of the public to the geosciences. See <http://www.bgs.ac.uk/geoweek/>

## TDAG DIARY DATES

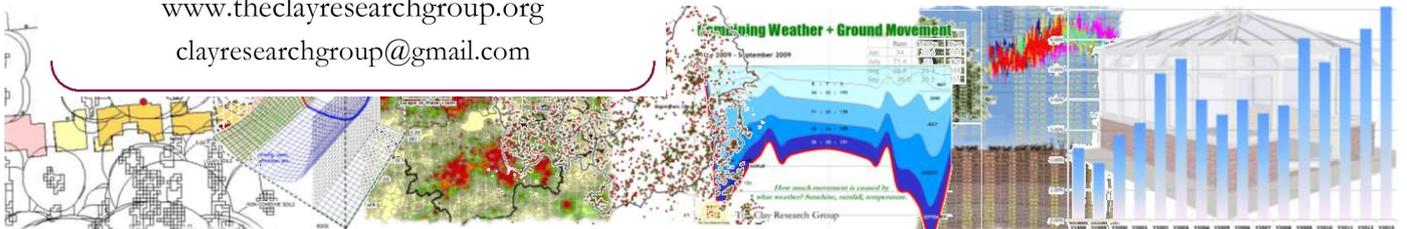
Annual Amenity Arboriculture Conference will be held at the University of Exeter on the 9 – 12<sup>th</sup> September 2018: "Soils and trees – standing your ground". Details on the TDAG website at:

<http://www.tdag.org.uk/conferences.html>

## THE CLAY RESEARCH GROUP

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## How GDPR Might Turn Back the Analytics Clock

Tony Boobier, BEng, CEng, FICE, FCIM. MCIPS.

‘An Englishman’s home is his castle’ goes the old expression. In most cases aren’t we defined not only by what we do, (we often describe ourselves by our profession) but also where we live? We are personally intertwined with our location, to the point that our address in effect becomes part of ‘us’.

So, with that idea in mind, I wondered about the impact of the forthcoming new data regulation on the topic of our address. GDPR, The European Union’s Data Protection Regulation comes into force on the 25th May 2018, with swingeing fines of up to 4% of annual global revenue for those who don’t comply.

In essence GDPR is all about the management and safekeeping of personal data. Personal data refers to any information that relates to an identified or identifiable natural person, and can include names, identification numbers, contact details, and *addresses*.

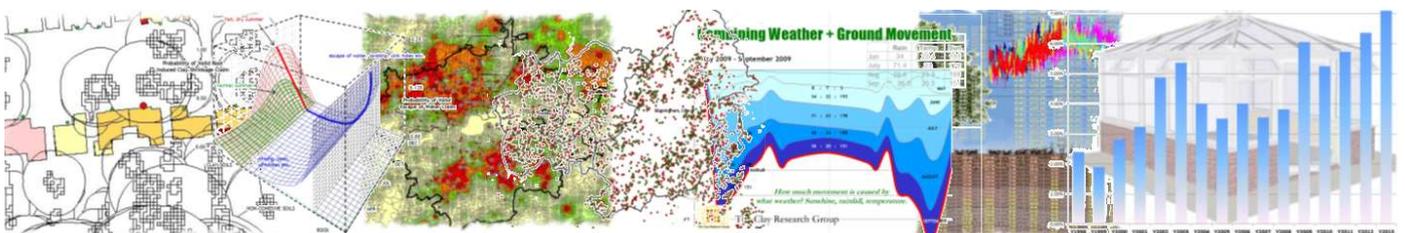
If we are so very connected with our home address, then it seems to me that detailed location information, inter alia, might conceivably fall within the scope of GDPR. In other words, give me an address or geo-location, and I can find who lives there. It may not be immediately obvious, but quite possible by converging a relatively small number of data sets including, for example the Electoral Register or using [www.192.com](http://www.192.com).

As the insurance industry has marched towards the greater use of data, with higher levels of granularity and analysis, do we now find ourselves at risk of needing to backtrack in some way because of GDPR? The higher the level of granularity, the greater the ability to link this to an individual.

The natural tendency of insurers could be to take the safe and less-risky route, and to step back from high granularity to that of aggregation of data, to ensure homeowner anonymity. But we already know that it is ‘underwriting at the edge’ which is a key competitive differentiator, not only in subsidence but also in flooding.

Do we really want to go back to the days of property rating by postcode?

There’s another school of thought, and that is one of distinguishing between physical hazard and moral hazard. Doesn’t physical hazard relate to the propensity of a property to be damaged, whereas moral hazard is essentially linked to potential policyholder behaviour? Perhaps so, but that argument isn’t made clear in the new regulation.



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## How GDPR Might Turn Back the Analytics Clock ... *continued*

The policyholder has the choice to opt in or opt out regarding data storage and usage - but this needs to be a deliberate decision on their part. With lack of trust prevalent around the use of data, in alleged voting manipulation for example, perhaps there might not be a stampede of those who want to opt in.

And with subsidence as a topic so far down the agenda at the moment, why would insurance company data and compliance officers even have subsidence on their radar? But, as they say, regulatory compliance fails at the weakest link in the data chain. Insurers, by the way, as 'controllers' are also responsible for data leaks within their supply chain, so this is an issue which potentially affects the whole industry.

Might this also provoke a movement towards the use of less but more significant data, on the basis that fewer data sets are easier to manage and 'control'. But in subsidence, are we yet confident as to what data is actually 'significant'?

With the date of implementation of the Regulation already within sight, and knowing that penalties are able to be imposed from the very beginning, experts are already saying that the issue of 'location' just hasn't adequately been thought through.

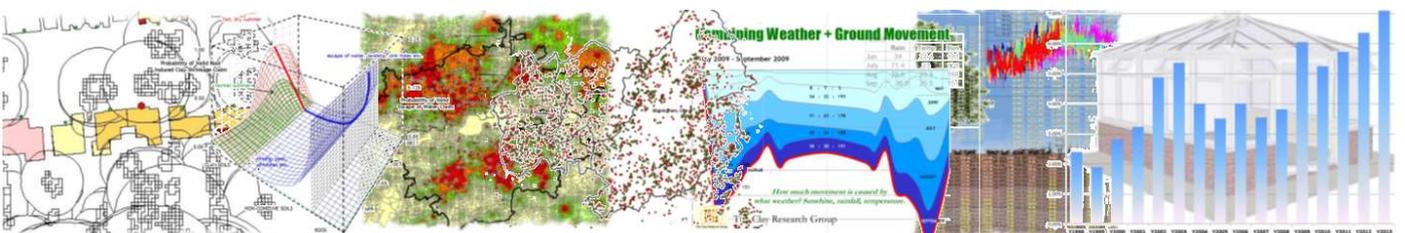
At the very least, might there be a need for some form of agreed 'market practice' which doesn't cut across issues of anti-competitiveness? Specifically in the subsidence industry, where will that leadership come from, and can those discussions happen at a peril-specific level or is there a need for a wider debate on 'location'?

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For further information and downloads providing information on all aspects of the regulations visit the web site of the Information Commissioners Office web site at <https://ico.org.uk/>

The CRG anonymises individual claims data by aggregating to postcode sector level. Sector data contains 2,600 properties on average, compared with the full postcode which (on average) includes 15 houses.

Anonymisation is further delivered by statistical normalisation of the output. No personal information (gender, race, religion) is stored or used in our analysis. The regulations provide some latitude relating to the use of data for research purposes and the development of Artificial Intelligence applications.



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## Aldenham School Update – The Headmaster’s House

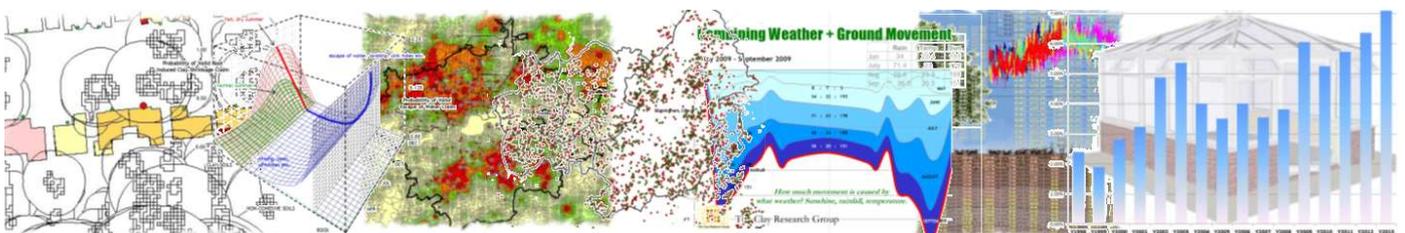
In the summer of 2009, cracks appeared in the rear corner of the headmaster’s house – Station 8 in the picture below. First thoughts were that the willow in the rear garden might be the culprit. Movement was recorded at the root periphery of the willow, and cracks had appeared in the summer.

### Recovery over Time – Rear Wall Aldenham School Headmaster’s House October 2009 – November 2017



Detailed investigations – several boreholes were sunk, soils tested and precise levels taken - revealed the culprit to be a large shrub growing against the rear house wall, close to Station 11 (see above). Removal of the shrub has resulted in slow and apparently ongoing recovery over the last eight or nine years. Total movement so far is shown above. Station 10 is an estimated reading – the station was lost when the shrubs were trimmed. More in next month’s edition.

Monitoring is being undertaken by GeoServ Limited and funded by Crawford & Company. Readings are updated every few months.



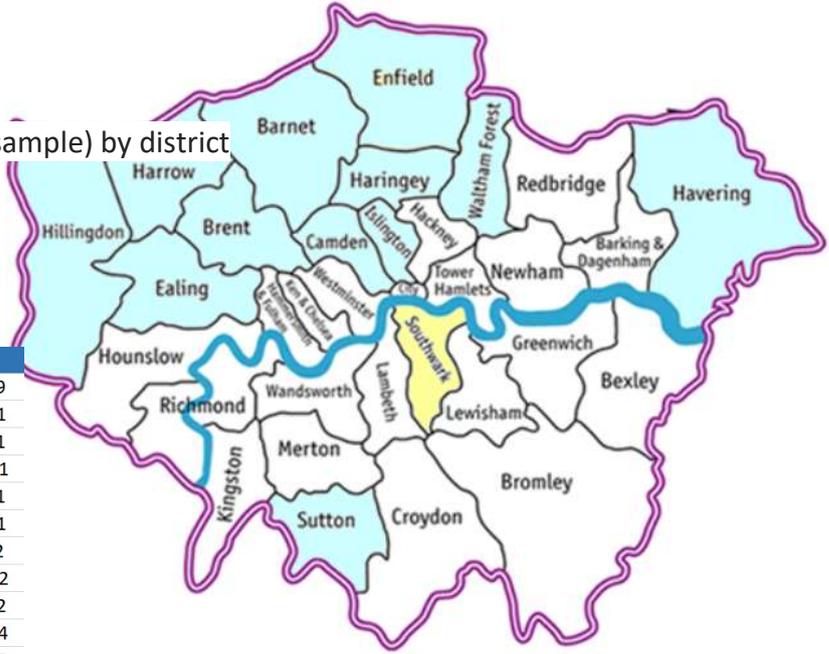
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## Southwark Borough, Map Index and Spend

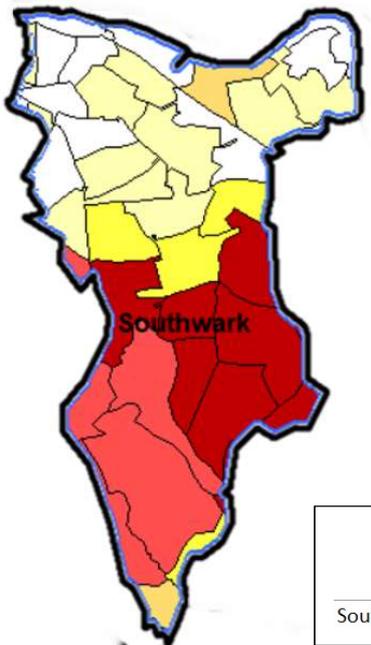
Population = 288,300  
 Households = 120,400  
 Area = 28.85 km<sup>2</sup>

UK Subsidence Risk (freq. from sample) by district  
 49<sup>th</sup> all residential  
 10<sup>th</sup> private housing only  
 1.74 x average UK risk  
 18<sup>th</sup> in terms of count of claims

Borough	Edition	Date
Islington	Issue 47	Apr-09
Camden	Issue 69	Feb-11
Brent	Issue 71	Apr-11
Haringey	Issue 72	May-11
Barnet	Issue 77	Oct-11
Waltham Forest	Issue 79	Dec-11
Welwyn and Hatfield	Issue 80	Jan-12
Ealing	Issue 84	May-12
Sutton	Issue 91	Dec-12
Hillingdon	Issue 106	Mar-14
Havering	Issue 149	Oct-17
Harrow	Issue 150	Nov-17
Enfield	Issue 155	Apr-18
Southwark	Issue 156	May-18



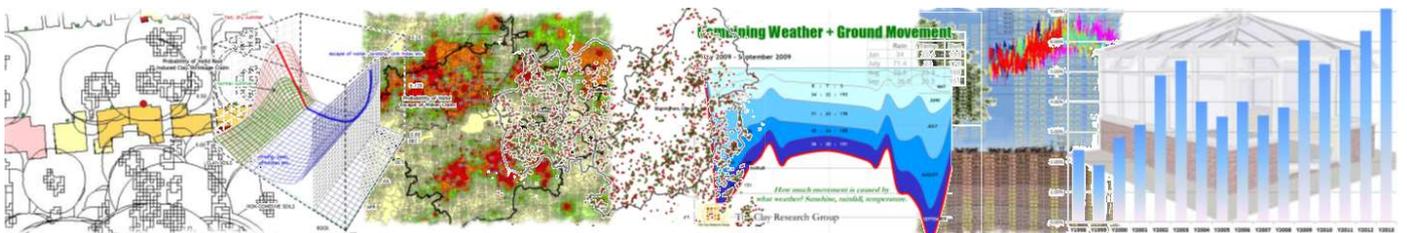
Above, a map of the London Boroughs showing the location of Southwark, bordered by the Thames to the north. Above left, a table of the boroughs appearing in earlier newsletters, listing the edition number and date.



Left, a map showing the subsidence spend by postcode sector with high values to the south, diminishing northwards towards the Thames.

The reason for this variation is described by maps on the following pages. Below, an extract from a Triage application listing probabilities of valid/declined by peril and by season. **NB** the data have been obtained from a sample of 14,000 claims and may (will) be biased by period of collection.

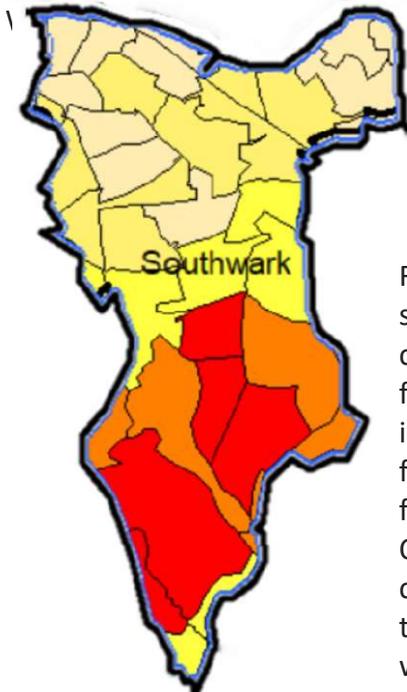
District	summer clay valid	summer EoW valid	Repudiation Rate (summer)	winter clay valid	winter EoW valid	Repudiation Rate (winter)
Southwark	0.683	0.096	0.221	0.04	0.27	0.69



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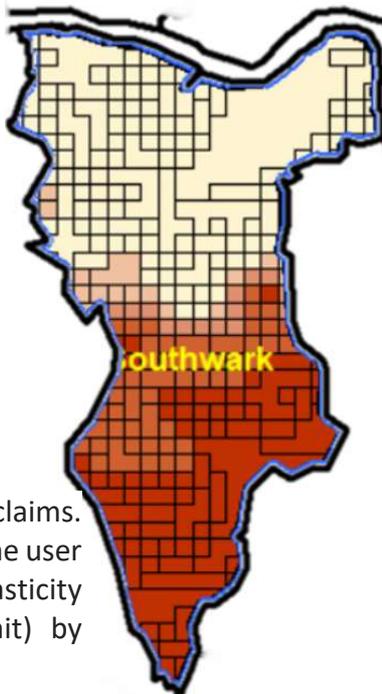
## Southwark Borough – Study Area

April 2012

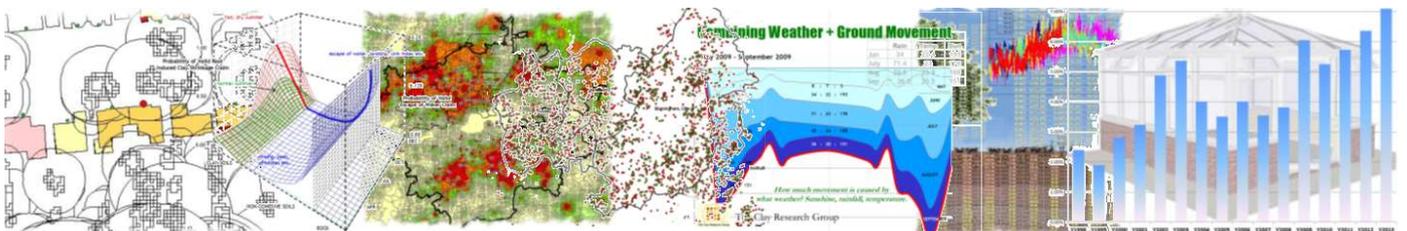
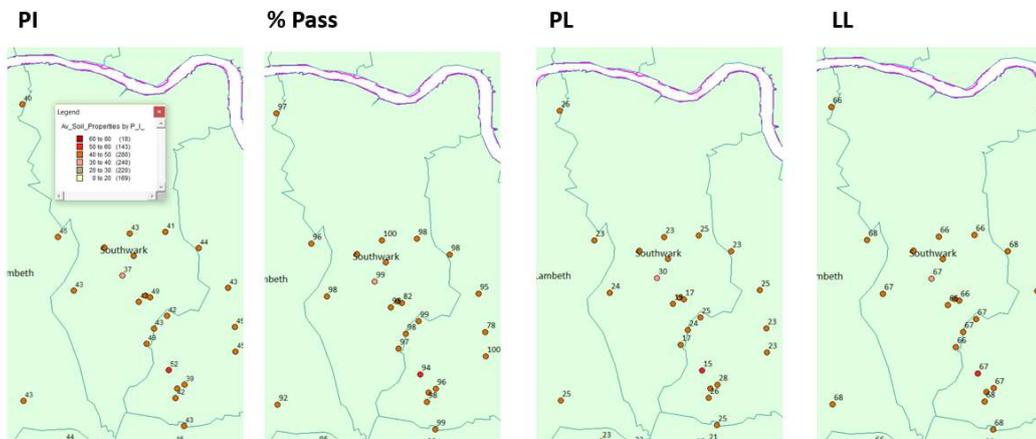


Left, the risk of subsidence by postcode sector, expressed as frequency – claims from sample divided by the housing population. The distribution mirrors the claims spend shown on the previous page.

Right, the CRG 250m grid showing the location of clay soils as determined from the results of site investigations. See following page for further details. Outcropping London clay lies to the south of the borough, coincident with high frequency and claims spend.



Below an example of data from a small sample of claims. The results are interpolated to produce the grid. The user can obtain full details of the investigations (Plasticity Index, % passing, Plastic Limit and Liquid Limit) by selecting a borehole on the plan.



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## Southwark Borough – Digital and Visual Geologies -

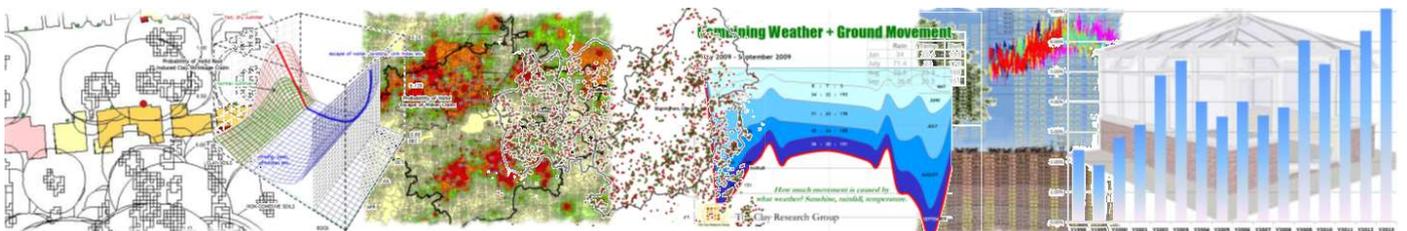
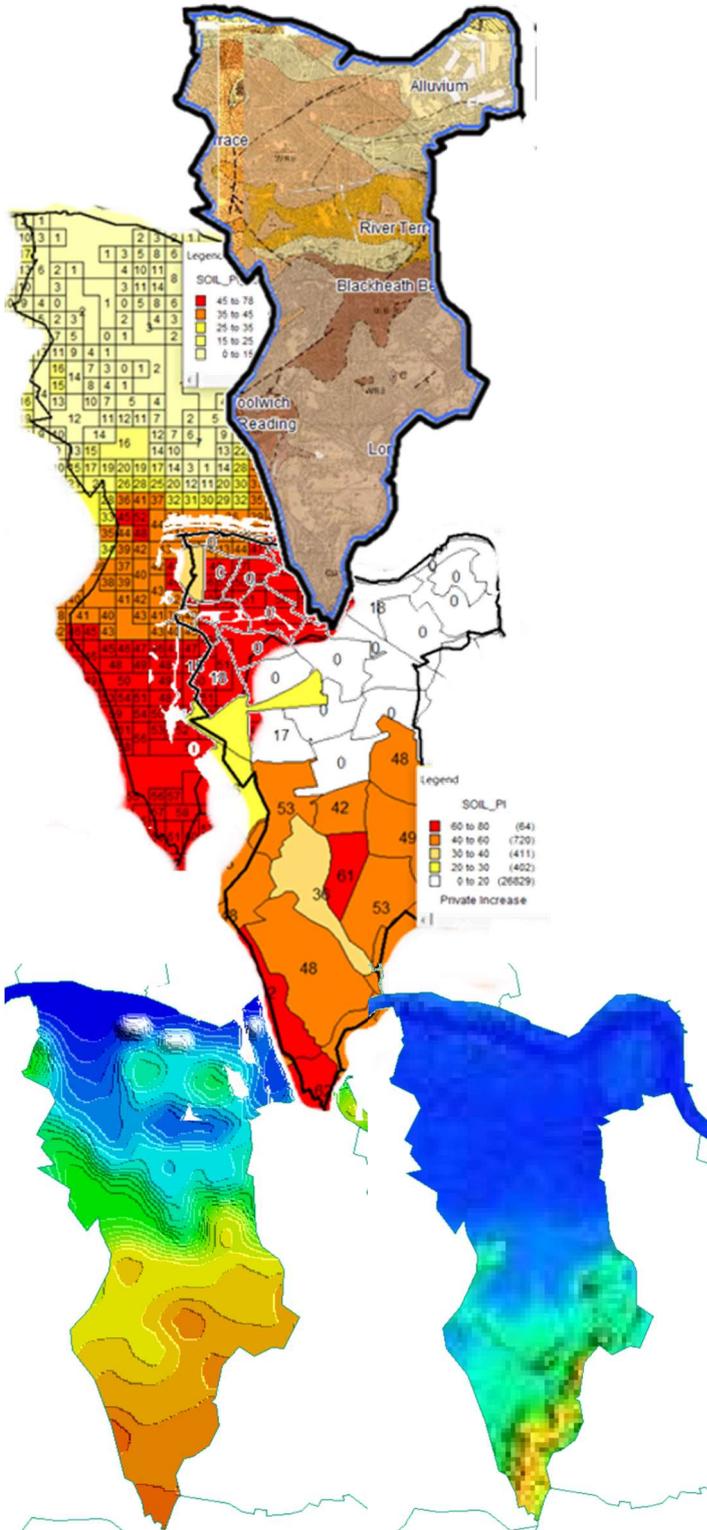
The development of the CRG geological map, built from site investigations and soil data obtained from the investigation of domestic subsidence claims, is described in the previous edition of the newsletter.

Top, the British Geological Survey 1:50,000 scale map of the area showing the various series which includes River Terrace and Blackheath beds to the north of the district and outcropping London clay to the south.

Centre, the CRG high resolution map using interpolated data, plotted on a 250m grid. Next, the data shown at a coarser resolution at postcode sector level.

The sector map is most useful for database referrals, and the grid for users of a GIS system.

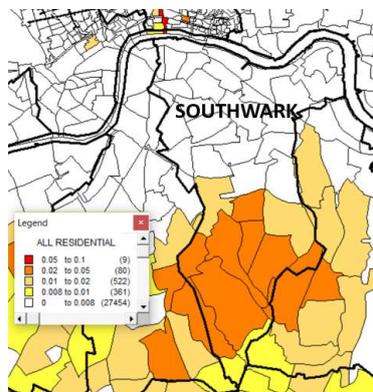
Bottom left, a different method of viewing the geology, distinguishing between series using a topographic representation. Right, LiDAR terrain satellite imagery.



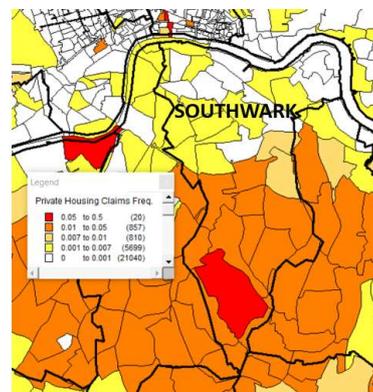
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## Southwark Borough – Ownership and Style of Construction

The ‘risk by ownership’ ranking reveals that the borough is 49<sup>th</sup> in the ‘by district’ table taking into account all properties but rises to 10<sup>th</sup> place if private houses alone are considered.

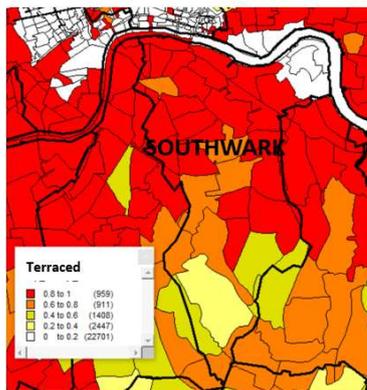


ALL RESIDENTIAL

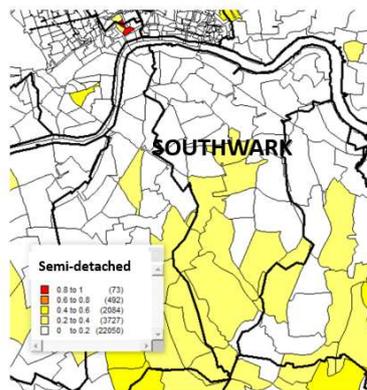


PRIVATE ONLY

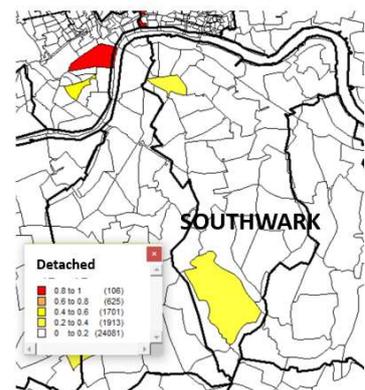
Below, distribution of houses by style of construction showing the concentration of terraced houses to the north of the borough and detached and semi-detached to the south.



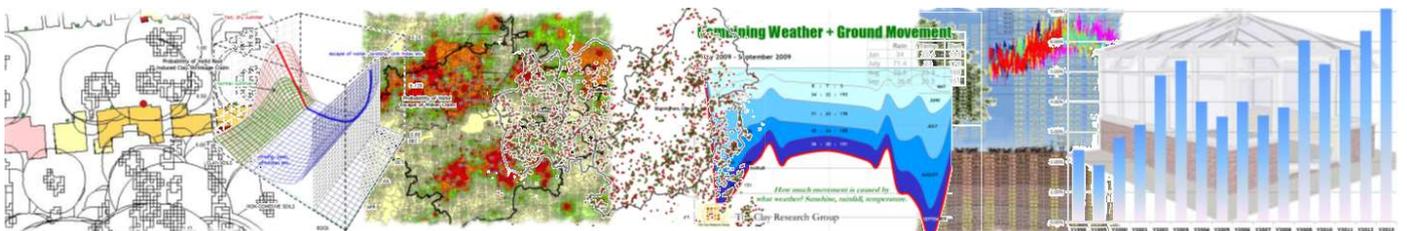
TERRACED



SEMI-DETACHED



DETACHED



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## Weather and Claims Update

Below, an extract from Richard Rollit’s Aston Conference slideshow from 2014, reviewing the Met Office’s prediction relating to wetter weather.

Surge – The Next 10 years?

*“There is a higher probability of wet summers continuing but it’s very early days in trying to understand why this is happening.”*



Stephen Belcher,  
Head of the Met Office Hadley Centre  
Professor of Meteorology at the University of Reading

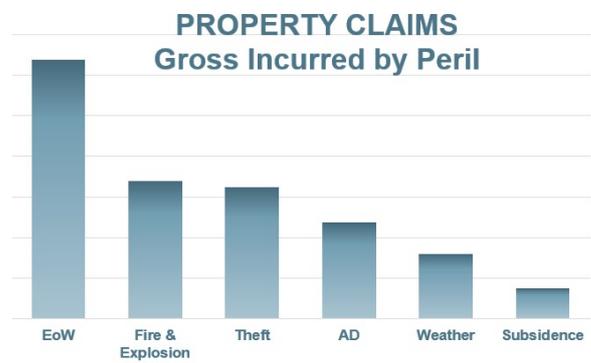
The Met Office summary reflecting on the summer of 2017 says: *“The summer was rather wet, with rainfall above average for the UK in each individual month. Provisionally this ranks as the ninth wettest summer in the UK in a series since 1910. It was also slightly warmer than average, but that is largely due to a warm June, as from mid-July onwards the weather was often on the cool side with an unsettled westerly regime.”*

*“The provisional total (rainfall) is 325 mm, which is 135% of the 1981-2010 average”.*

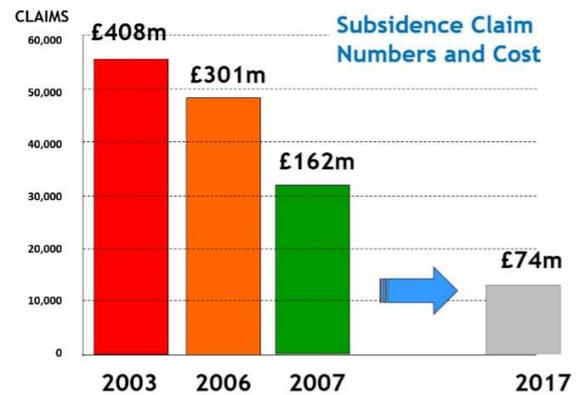
The temperature was 0.4degC above the 1981-2010 average.

So, in summary, wetter and warmer summers with no suggestion of any change on the way.

According to ABI figures, subsidence continues to account for around 4% of property insurers’ spend (see table below) and numbers continue to fall.



Below, comparisons with earlier years reveal the decline in claim numbers and spend. 2017 spend is the lowest since 1983.



The number of claims in 2017 amounted to 12,000 – the lowest since 1988.

