The Heath & Hampstead Society

The Society examines all Notices of Intent relating to Hampstead and Hampstead Heath Fringes, and assesses them for their impact on conservation and on the local environment.

To London Borough of Camden

Planning Ref:	2019/5848/T
Address:	1 Redington Road
Case Officer:	Tree Allocation
Date:	November 2019

This is an objection to this Notice of Intent to fell trees here.

Crawford's engineer demonstrates no understanding of the local geology or of vegetation-related subsidence. From the Addendum Technical Report the trial hole and borehole were dug 25th Sept 2019 when it was raining. The layer erroneously labelled 'Made Ground' is actually 'Head', a solifluction created at the time of the last ice age with some bits of modern brick, concrete and clinker subsequently dug into it. This apron of previously transported material is highly water permeable and acts as a shallow aquifer; the water table was found at 0.9m with standing water in the Trial Hole/Pit 1. This coincides with the foundations also found at a depth of 0.95m.

Below this layer the underlying sediment is the Claygate Beds, a 'seepage surface' whose upper boundary with the fully permeable Bagshot Sand beds is a spring line running along Redington Road's north side. Redington Road had its own notorious pothole in 2011; clear evidence of silt erosion by the action of ground water locally: https://www.hamhigh.co.uk/news/crater-big-enough-to-fit-a-man-in-opens-up-in-hampstead-1-1104725

Ham&High InBrief | THIS WEEK'S LOCAL NEWS HIC

Crater big enough to fit a man in opens up in Hampstead

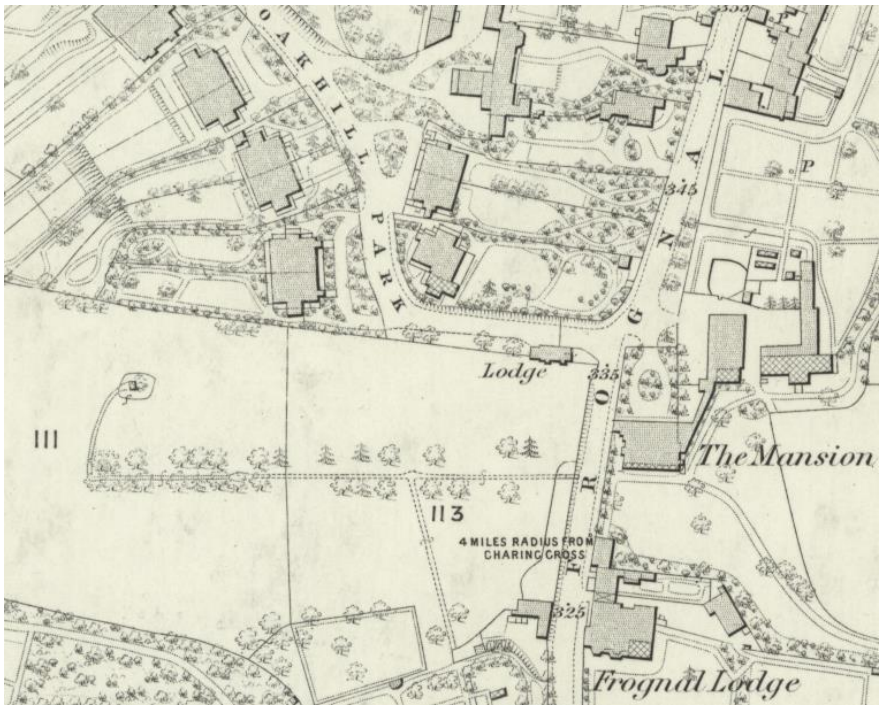
PUBLISHED: 13:18 21 October 2011 | By Josh Pettitt

Cllr Chris Knight with his feet in the giant hole in Redington Road, Hampstead. Picture: Nigel Sutton

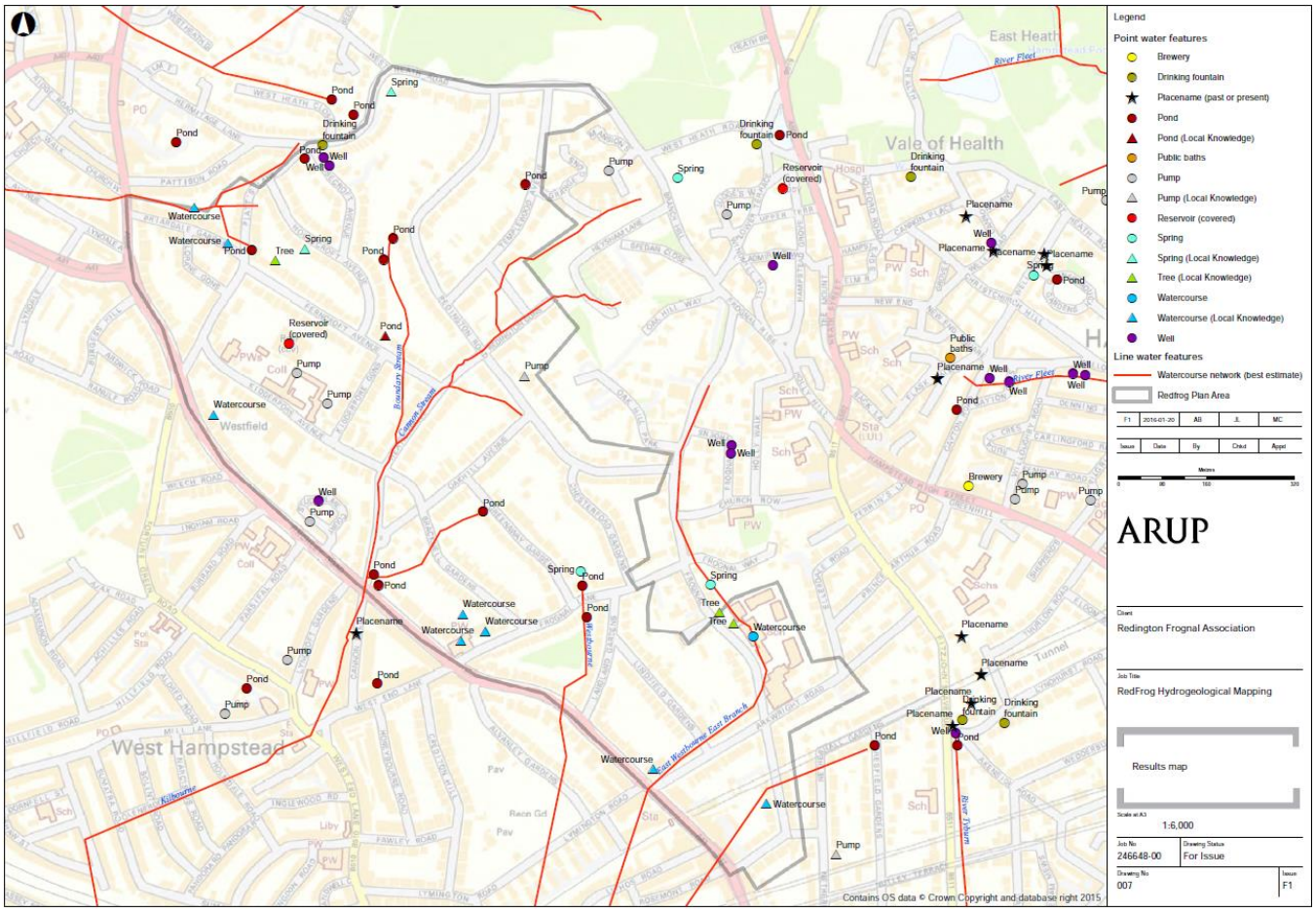
A vast hole in the road leading to an underground chasm opened up in Hampstead over the weekend.

While containing some clay, and being less permeable than the Head and much less permeable than the Bagshot Sands, the Claygate Beds layer still allows variable amounts of water through it; in TH1 it is described as laminated, with gravelly sandy silt; very silty sand; silt and fine sand etc. as well as the clay.

The water of the spring line and the seepage surface below at the eastern end of Redington Road will run within the Head layer mainly but also below within the Claygate, eastwards and downhill to the nearest river, a branch of the River Westbourne (see map below from http://www.redfrogforum.org/arup-redfrog-sub-surface-water-features-map-and-spring-line/). A line of trees ran either side of the track that was here (before the roadway of Redington Road was formed and the houses built), presumably to help keep the underlying soil drier. This is shown on the 1866 OS map and on an earlier painting of an uninterrupted line of more and very tall trees here.



As this groundwater turns and joins the river, the western roadway of Frognal is cut into the land here with a steep slope up to the Frognal Side of 1 Redington Road. The river runs down Frognal (eventually into the Westbourne), past the bay that is subsiding.



While the majority of it is in a drain which can be heard through grates in the roadway of Frognal (such as is easily heard outside University College School), much of the water going down this hill will be in the Head layer and along the superficial water table, some within the Claygate beds, eroding silt as it goes. I believe this to be the primary cause of the subsidence here; on-going for years. As with many many buildings in Hampstead, silt erosion has been developing for decades (or even centuries), increasing during storm days with surging groundwater until finally beyond the point of stability when cracking finally occurs. Then, as the years and the storms go by, more and more erosion produces further crack opening and subsidence that is cumulative until remedial action is taken.

What is the evidence for the subsidence being contributed to by trees? The Plasticity Index is hardly remarkable, the soil immediately below the foundations being in the order of 22%. Beyond this it will be - and was found to be - variable, which is usual in the Claygate Beds deposit, and presents a much lower risk of clay-related ground subsidence. Even in ground with a high potential for such movement, root suction usually must be able to dry out a significant thickness of soil below the foundations to be capable of causing building damage. Since the water table lying above the Claygate Beds is at the level of the bottom of the foundations this is essentially non-existent. To suggest that desiccation is a cause is a little curious, particularly as it is suggested that desiccation can be inferred from the shear vane tests. I would suggest the shear vane readings do not confirm high shear strength - they merely confirm variation - and in any case this is not a very reliable correlate for desiccation in an area of *laminated* soil.

I consider there is no evidence that the trees are or even could be a significant cause of the subsidence. No data or information is given as to where or when the cracking appeared, its history or its form. Movement monitoring has not been performed or its results presented which might indicate what the cause might be. If the cracking were to be tree-related then crack closure and ground recovery would have to be demonstrated in winter.

The question of a dry summer - June 2018 was particularly dry - rears its head as the national newspapers clamour to tell us about the flood of subsidence claims that will appear. These self-fulfilling prophecies annoy me intensely every time they happen; April and October of 2017, September and October of 2018, January, April and May of 2019 were also dry, and why did this house not crack up in 1976, 1985, 1990, 1992, 1995, 1996, 2003 and 2006: individual surge years characterised by more than 50,000 subsidence claims. What has also been apparent though is that the weather in recent years has brought record levels of storms with very high rainfall: ideal conditions for silt erosion by groundwater action. Those whose homes are within the Claygate Beds in Hampstead and whose lower floors flood during periods of high rainfall had seven in the summer of 2017, the worse for 24 years.

This house and its bay have been there for some years (no details are given in the report), *with* the existing trees, and not had cracks before as far as I am aware. We need to see the movement data across a sufficiently long period to include rain storms to assess gradual erosion by successive ground water surging, and across leaf flush and fall to assess vegetation-related subsidence. Someone with the experience to do this needs to check for other causes in the bay's construction and its fixation to the building.

Removing trees here will not stop subsidence even if it were to play a small additional part, but there is always the chance that this would hasten silt erosion.

It is my opinion that the recommendation for these trees to be removed is at least premature and most probably an inappropriate remedy for the subsidence damage.

Dr Vicki Harding
Society Tree Officer