



**SUBSIDENCE REPORT**

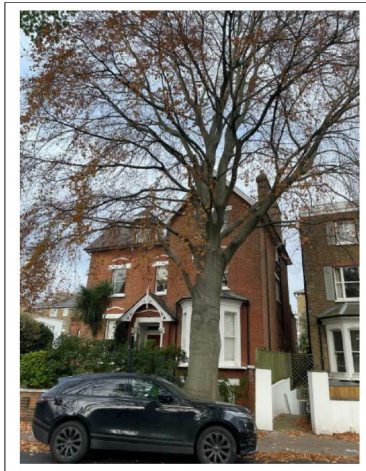
*on*

*37 Lancaster Grove, London, NW3 4HB*

**Prepared by Bob Gibson, BSc., FFPWS**  
**Subsidence Consultant (Structural Engineer & Building Surveyor)**

**Inspection – 5<sup>th</sup> December 2022**

**Report dated – 7<sup>th</sup> December 2022**



In accordance with your recent instructions, we have examined the above property in order to advise you as to its structural condition, with particular reference to structural movement.

The building & environment

The property comprises a detached 4-storey house of traditional masonry load-bearing wall construction, probably built at around the turn of the 20<sup>th</sup> century.

The house is constructed on a predominately level site, in an area in which (according to the British Geological Survey map) the subsoil most likely comprises London clay. We noted the presence of some vegetation in your front garden which is close enough to be able to root beneath the foundations, in particular a very large beech tree which we understand is the subject of a Tree Preservation Order. The site is also situated within the Belsize Conservation Area.

The damage and likely cause

We noted several areas of cracking (internally and externally) which is commensurate with foundation movement caused by subsidence – predominately affecting the front steps and garden walls, but also to a lesser extent the main front elevation.



Damage would generally fall within category 4 - “Severe” (external works) and 2 “sight” (main house) from BRE Digest 251 - “Assessment of Damage in Low Rise Buildings”, and is indicative of subsidence to the steps, external works, and to the front elevation. It is very likely to be caused

by clay shrinkage due to roots from the aforementioned vegetation extracting moisture from the underlying clay beneath the foundations.

Some site investigations were undertaken in May 2020 at the base of the steps, which found a sandy clay made ground to 3.2m depth, with natural stiff high plasticity London clay beneath, and beech roots were found to 4m depth. Desiccation was seen to exist at around 3m and the conclusion of an Arboricultural consultant was that the damage was due to the beech tree, which should be removed for the problem to be properly resolved. We understand that the local authority have refused to permit the removal of the tree, though we are not aware of their specific reasons for this or details of the reasons which were given in the application for removal. We discussed that the fact that made ground was discovered to 3.2m depth (way below the bottom of the foundations to the steps) and that this was not tested for desiccation, gives the local authority an opportunity to dispute that the removal of the tree would resolve the problem. Made ground is typically much weaker than natural subsoil (because it is unconsolidated backfill), and is potentially vulnerable to long-term settlement.

The method of construction of this type of house involves the dumping of subsoil excavated for the basement in front of the house so that the front gardens and road levels are all raised by this fill material. We would not expect to find made ground beneath the basement foundations.

Crack width and level monitoring were carried out for a year between March 2019 - March 2020 which showed a clear seasonal pattern of movement to the steps ( downward movement in the summer followed by uplift in the winter).

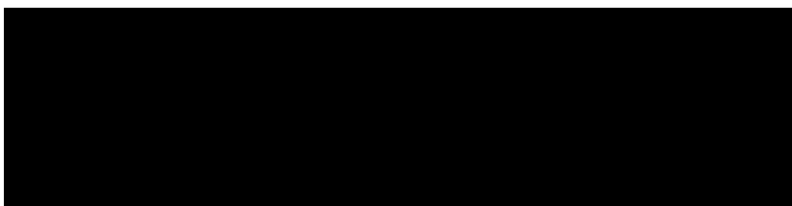
*Action recommended*

We advise that some more site investigations be undertaken (i.e. trial pit and borehole to the front lightwell) in order to ascertain construction of house foundations and subsoil condition. We also advise that level monitoring be reactivated and crack monitoring extended to cover all cracks (including those in the house and to the garden wall which are not currently being monitored). We are able to organise and oversee these investigations.

If shrinkable clay is found, samples can be tested for plasticity (shrinkability) & desiccation, and roots encountered can be sent off for botanical identification. With that information, an Arboricultural consultant could be re-engaged to consider an appropriate scheme of tree management around the property to balance risk of subsidence against loss of amenity. If appropriate, with sufficient quality technical evidence, a carefully prepared application to fell the beech tree could be made by an Arboricultural Consultant experienced in making such applications. We discussed that the local authority will be likely to strongly resist the felling of this tree (because of its high amenity value) and without “perfect” evidence, you stand no significant chance of getting their approval. Even with the right technical evidence, they still might refuse it on the grounds that the cost of alternative measures (such as a root barrier) would be less than the value of the tree. If they refuse permission to fell in the face of a well-presented case backed with good evidence, then they can become liable for the cost of whatever alternative scheme becomes necessary.

Such an alternative scheme might comprise the construction of a root barrier between the tree and the building, or potentially the underpinning of the house and steps / external works. A decision cannot really be made concerning what the extent of works required to the house is until it is known whether or not the beech tree is to remain.

Should you require any further advice or assistance on any aspect of this report, please do not hesitate to contact the undersigned.



Bob Gibson, BSc., FFPWS

Subsidence Consultant (Structural Engineer & Building Surveyor)