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| TREE PRESERVATION ORDER | TPO 1 1950 W24 |
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| TREE(S) - as referenced in the MWA Arboricultural Report | WORKS |
| T1 Oak | Reduce height to ~10.0m and crown spread to ~12.0m [6m radius] leaving a balanced crown and re-prune thereafter on a triennial cycle to retain at reduced dimensions. |

Reason: The above tree is considered to be responsible for root induced clay shrinkage subsidence damage to 23 Three Oaks Close, UB10 8DU.

Investigations in to the damage have been conducted and the following information/evidence obtained:

1. Engineering opinion is that damage is due to clay shrinkage subsidence. Details of the damage are included in the technical report submitted.
2. Foundations are bearing on to Clay.
3. The clay subsoil has a medium volume change potential (NHBC Guidelines) susceptible to undergoing volumetric change in relation to changes in soil moisture.
4. Roots were observed to a depth of 0.9m bgl in TP1 and to 2.0m bgl in the adjacent BH1, and recovered samples have been positively identified (using anatomical analysis) as *Quercus* spp.; the origin of which will be T1 Oak.
5. Level monitoring for the period 12.03.21 to 14.03.22 has recorded a pattern of movement indicative of the effects of seasonal soil drying by the subject tree below foundation level.
6. A drainage investigation has not been undertaken, however the trial pit/ borehole investigations did not reveal any suggestion that leakage from drainage is adversely affecting the property. Drains can be discounted as a causal factor by reference to the level monitoring data.
7. No tree works have been carried out during the period of the claim or in the recent past in relation to the damage to the rear left-hand corner of the building.
8. No recent structural alterations or building works have been carried out. The property has not been underpinned.
9. A root barrier has been considered as an alternative to tree removal. This is unlikely to be a viable option due to the proximity of the tree to the building and the potential for destabilising the tree and building.

10. Superstructure repairs and decorations are currently estimated to be £2.5k should the tree works be undertaken. Costs for underpinning in the event the tree works do not proceed are currently estimated to be £40k.
11. The evidence confirms that on the balance of probabilities the subject tree is a material cause of the subsidence damage.

SUBSIDENCE CHECK LIST

- A description of the property, including a description of the damage and the crack pattern, the date that the damage first occurred/was noted, details of any previous underpinning or building work, the geological strata for the site identified from the geological map.
Technical Report and Site Investigation Report provided.
- Details of vegetation in the vicinity and its management since discovery of the damage. Include a plan showing the vegetation and affected building.
MWA Arboricultural Report provided.
- Measurement of the extent and distribution of vertical movement using level monitoring. Where level monitoring is not possible, state why and provide crack monitoring data. Data provided must be sufficient to show a pattern of movement consistent with the presence of the implicated tree(s).
Level Monitoring provided.
- A profile of a trial/bore hole dug to identify foundation type and depth and soil characteristics.
Site Investigation Report provided.
- The sub-soil characteristics including soil type (particularly that on which the foundations rest), liquid limit, plastic limit and plasticity index.
Site Investigation Report provided.
- The location and identification of roots found. Where identification is inconclusive, DNA testing should be carried out.
Site Investigation Report provided.
- Proposals and estimated costs of options to repair the damage.
Repair costs provided.