

TREE PRESERVATION ORDER	TPO 156
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TREE(S) - as referenced in the MWA Arboricultural Report	WORKS
T1 Oak	Reduce height by 1.5m and crown radius by 1m to previous pruning points. Prune on a triennial cycle to maintain at broadly reduced dimensions.
T2 Horse Chestnut	Remove (fell) to near ground level. Owner to physically remove any regrowth (no chemical treatment due to translocation risk).

Reason: The above trees are considered to be responsible for root induced clay shrinkage subsidence damage to Flats 1 & 3 Uplands Court, 19 Frithwood Avenue, Northwood, HA6 3LY.

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 to high volume change potential (NHBC Guidelines) susceptible to undergoing volumetric change in relation to changes in soil moisture.
4. A comparison between moisture content and the plastic and liquid limits suggests moisture depletion in BOTH TP/BH1 and TP/BH2 (September 2019).
5. Roots were observed to a depth of 2.1m bgl in TP/BH1 (March 2021) and recovered samples have been positively identified (using anatomical analysis) as Aesculus spp. and Quercus or Castanea spp. the origin of which will be T1 Oak and T2 Horse Chestnut confirming the influence of these trees on the soils below the foundations. All trees included within the application are within the normally accepted influencing distance of the building.
6. Level monitoring for the period 26/09/2019 to 08/07/2021 has recorded a pattern of movement indicative of the effects of seasonal soil drying by the subject trees below foundation level. The uplift phase of the building can only be attributable to an expanding clay soil from a desiccated (shrunken) state due to the soil drying effects of the implicated trees.
7. The drains have been surveyed and though signs of defects were found, these are not considered to be the cause of the current damage. They were repaired in October 2020. Drains can further be discounted as a causal factor given the recorded desiccation and by reference to the level monitoring data.
8. TG2 Sycamore was removed in 2020.

9. No recent structural alterations or building works have been carried out. The property has not been underpinned.
10. A root barrier has been considered as an alternative to tree removal. This is not a viable option for T2 due to the proximity of the tree to the building. A root barrier may be viable for T1 although this will need to extend across the neighbouring property to the right requiring their consent will be required. The cost of a deep barrier is currently estimated to be £25k - £30k.
11. The evidence confirms that on the balance of probabilities the subject trees a material cause of the subsidence damage.
12. Superstructure repairs and decorations are currently estimated to be £15k should the tree works be undertaken. Costs for underpinning in the event the tree works do not proceed are currently estimated to be £75k.
13. Replacement planting of standard size trees with agreement of Local Authority.

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.
ADDENDUM TECHNICAL REPORT PROVIDED.