



TREE PRESERVATION ORDER: TPO 210 2016 & TPO No 240 2020

TREE T2 Cypress, T3 Willow and T4 Sycamore of MWA Arboricultural Report

Works - REMOVE

Reason: The above trees are considered to be responsible for root induced clay shrinkage subsidence damage to 59 Pearson Park, Hull, HU5 2TQ

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 Crawford Technical report submitted.
2. Foundations are bearing on to clay.
3. The clay subsoil has a medium to high volume change potential (NHBC Guidelines).
4. A comparison between moisture content and the plastic and liquid limits suggests moisture depletion in both TP/BH1 and TP/BH2 (October 2019).
5. Roots were observed to a depth of 500mm bgl in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as Acer (Maple), the origin of which will be T4 (Sycamore – Maple). Roots were observed to a depth of 1,000 and 1,500mm bgl in TP/BH2 and recovered samples have been positively identified as Cupressaceae (Cypress) and Salicaceae (Willow family), the origin of which will be T2 (Cypress) and T3 (Weeping Willow) respectively, confirming the influence of T2, T3 and T4 on the soils below the foundations. All are within the normally accepted influencing distance.
6. The observed moisture depletion is coincident with recorded root activity at depths beyond ambient soil drying effects and consistent with the soil drying effects of the implicated trees.
7. Level monitoring for the period 28.02.20 to 24.02.21 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.
8. The drains have been surveyed and found to be in a serviceable condition as such they are not to be a factor in the current damage.
9. 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 front right of the building.

10. No recent structural alterations or building works have been carried out. The property has not been underpinned.
11. A root barrier has been considered as an alternative to tree removal and may be viable in respect of T3 and T4 however this requires further appraisal to evaluate the constraints of the site. The barrier will need to extend across the neighbouring property to the right and their consent will be required. Tree T2 is too close to the building. The cost of a deep barrier is currently estimated to be £25 -£30k.
12. The evidence confirms that on the balance of probabilities the subject trees are a material cause of the subsidence damage.
13. Superstructure repairs and decorations are currently estimated to be £18k should the tree works be undertaken. Costs for substructure stabilisation in the event the tree works do not proceed are currently estimated to be £80k.
14. Replacement planting of standard size trees will be funded by insurers subject to planting location – to be agreed with the LA.

#### 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**