

building on success

Trees and Basements

Partial Review of the Core Strategy

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Regulation 19, Town and Country Planning (Local Planning) (England) Regulations 2012



THE ROYAL BOROUGH OF
KENSINGTON
AND CHELSEA

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1. Introduction

- 1.1 The Council is undertaking a partial review of the Core Strategy. This paper relates to the review of the basements planning policy. The Council has undertaken a range of consultation during the preparation of the draft basements policy. Comments have been made by various parties that suggest that the 1m of permeable soil that is required by the existing and the draft policy above a basement is sufficient to sustain large trees. It has also been suggested that the publication policy should allow tunnelling underneath trees. This paper presents the Council's evidence in relation to these issues.

2. Tree roots in the urban environment

- 2.1 Some representations to the previous consultation on the draft basements policy have indicated that the majority of tree roots are usually found in the upper metre of soil. However, studies such as the 'Kew Wind Blown Tree Survey' (Gasson and Cutler 1990) suggest that this isn't strictly the case. The survey results show that 56% of trees surveyed had a root plate depth of below 1 metre. It is also worth noting that the gravel subsoil type found at Kew is documented as being the same or similar to the subsoil found within a large area of RBKC. The Arboricultural Advisory and Information Service research note 'Tree Root Systems' (Dobson 1995) states that "*All trees can develop a deep root system (2-3 metres deep) if soil conditions allow*". However, this ability will be influenced by the capacity of different species to tolerate varying soil conditions.
- 2.2 In the urban environment root spread is often constrained by building/wall footings, level changes, highly compacted soil etc. However, in some instances tree roots have been found to grow downwards under such constraints to utilise the soil beyond the property curtilage. A trial excavation carried out at a property in Elgin Crescent in 2012 revealed a number of large structural roots over a metre deep from a mature tree some three metres away. The largest root was 70mm in diameter and the deepest at a depth of 1350mm. Recently in 2013 at a property in Walton Street, roots from a tree in an adjacent garden directly beyond a party wall were found to have grown through and under the wall into the garden of the Walton Street property. The chartered surveyor representing the tree owner has stated the ground level of the Walton Street garden is approximately 1.8 to 2.1 metres lower than the ground level where the tree stands. The roots in the neighbouring garden were over 75mm in diameter and were effectively over 2 metres below the level of the property containing the tree.
- 2.3 These two examples provide evidence that trees will sometimes adapt to the conditions available. In this instance, these examples demonstrate that within the urban environment we cannot accept the notion that roots are always going to be confined to the top metre of soil due to the various physical constraints that exist.

3. Tunnelling beneath trees

- 3.1 RBKC does not support tunnelling beneath the Root Protection Area (RPA) of trees to construct basements as we cannot be sure what affect this type of

construction practice will have on soil structure and the health and stability of the tree/s above. (Root Protection Area as prescribed by BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'). Tunnelling beneath RPA's raises the following questions:

- i) At what depth would it, if at all, be acceptable to tunnel and build beneath existing trees?
- ii) What happens to the soil structure and therefore the stability of the tree during the tunnelling/construction process?
- iii) How does the construction of a basement beneath a tree affect the soil drainage?

3.2 During the review of BS 5837:2005 'Trees in relation to construction – Recommendations' in 2011, the London Tree Officers Association submitted the above points to the review committee. BS 5837 had never before addressed basement developments and the impact on trees. The 2012 revision states that "it might be technically possible to form the excavation by undermining the soil beneath the RPA." Equally, it might not be technically possible to form an excavation under a tree without the tree becoming unstable.

4. New Tree Planting

4.1 It is certainly possible to plant trees in one metre of soil. However, there are other factors that need to be considered to ensure that the tree has the opportunity to mature fully. The physical root barriers, such as boundary walls, building foundations etc, typically found in this borough may restrict certain species from utilising soil beyond these constraints, which could greatly affect the health and vigour of many trees. There are many examples of town centre planters filled with half matured and moribund trees that will have become this way for a number of reasons, such as drought, water logging, lack of soil volume etc. There is a good example of this in the brick courtyard outside Kensington Town Hall where there are two moribund trees standing in less than a metre of soil above the basement car park.

5. Summary

5.1 It is difficult to argue that new trees will not survive if planted in 1 metre of soil. However, when you consider the constraints on a newly planted tree above a basement in a walled garden with potentially limited soil volume available the scenario appears not too dissimilar to the many moribund town centre trees in planters. Providing a suitable growing medium for all species of trees may not always be possible above a basement one metre below ground level, especially where further rooting constraints exist beyond the basement footprint. However, the proposal to restrict basement extensions to 50% of the garden footprint would assist in providing adequate soil volumes for trees to establish and grow healthily whilst maintaining and enhancing the green landscape.

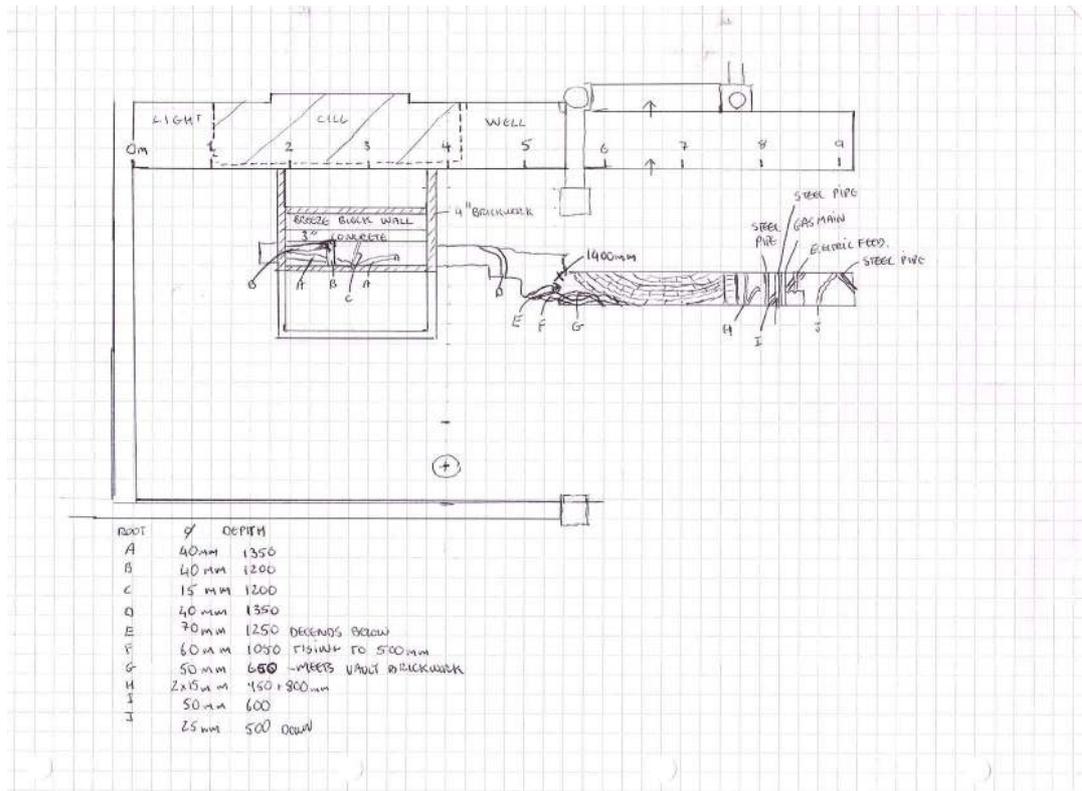
5.2 It is clear that not restricting soil depth and tunnelling beneath the RPA of trees in the highly built up environment of RBKC represents a genuine threat

to the borough's current and future tree stock. RBKC see no merit putting at risk its fine heritage of trees to facilitate the construction of basements.

Appendix 1 – Examples of tree roots found at abnormal depths in RBKC.

Case study 1. – Elgin Crescent, W11

Exploratory excavations at this property revealed a number of large structural roots, as deep as 1.3 metres, belonging to a tree of heaven. Below is a graph provided by the property owner's arborist showing the position, size and depth of the roots discovered. The excavations were approximately 3 metres from the tree.



Case study 2. – Egerton Crescent, SW7

Trial excavations in the rear garden of the adjacent property in Walton Street revealed large structural roots from a mature London plane tree in Egerton Crescent in several areas of the Walton Street garden. The party wall surveyor representing the property owner of the Egerton Crescent property stated that the ground level of the Walton Street garden was approximately 1.8-2.1 metres lower than the ground level.

This photo was taken from the Walton St garden looking towards to party wall adjoining the Egerton Crescent property.



The London plane tree viewed from the Walton Street rear garden.



Large roots close to party wall in Walton Street garden.



Trench exposing roots colonising the soil in the Walton Street garden.



This is a common representation of tree planting in RBKC as many trees are planted at the end of rear gardens close to party walls or building elevations due to the limited size of rear garden space in the borough. It provides an excellent example of tree roots adjusting to the various constraints found in RBKC and highlights the fact that roots are found much deeper than stated in a text book rooting scenario.