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Michael Spalter
239 Haverstock Hill
London
NW3 4PR

Date: 9th April 2015



Dear Mr Spalter,

Reference: Mature Horse Chestnut Tree Growing in the Front Garden of 239 Haverstock Hill.

On 31st March 2015 I attended the above property as per your instruction. The purpose of my visit was to investigate the likely impact (on the above tree) of rebuilding the front boundary wall which is in a state of disrepair. I have since liaised with your architect about the solutions proposed by engineers for the construction of that wall.



Current Situation

The front garden of 239 Haverstock Hill measures approximately 10m x 11m and is approx. 1.3m higher than the adjacent public footway. Soils have been retained by a concrete retaining structure that has cracked and become displaced. This now leans over the public footway and is threatening to collapse onto the footway.



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A mature horse chestnut tree grows within the front garden, close to the front boundary (see Photograph 1 in Appendix 2). The distance between the root-flare (where the outer stem base meets the ground) and the inner face of the retaining wall is 550mm (see Photographs 2 and 3).

Several excavations have been undertaken to the rear of the wall to investigate the existing structure and inform engineers what will be required to repair or replace that structure.

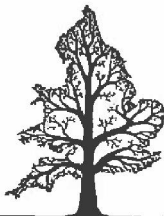


Engineers, builders and architects are all concerned that the solutions that are available will potentially have a detrimental impact on the health of the tree and also its stability.

Brief Tree Description

The horse chestnut is approximately 12m tall with a stem diameter of 850mm. It is single stemmed and leans towards the adjacent public highway. The canopy is reasonably balanced and extends slightly further along the axis parallel with the front boundary (3.5m and 4.5m) than it does over the road or into the garden (2.5m). It has been heavily reduced in the recent past.

It appears to be in reasonable physiological health for a tree of its age that has been so heavily reduced. It has no obvious structural defects. Were the tree ever to become



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uprooted, it would most likely fall across the adjacent busy footway and highway due to the significant lean of the stem in that direction.

Existing Retaining Structure

The retaining structure appears to be made of cast concrete. It is approximately 1.3m tall and measures 180mm thick at the top. The structure gradually increases in thickness (the rear face was never vertical) down to a depth of approximately 800mm at which point I estimate it to be approximately 300mm thick. Below this point, the rear face of the structure steps out and I estimate that it becomes approximately 550mm thick. The wall leans over the adjacent public footway by 100mm or more and is threatening to collapse.

Potential Impact of Rebuilding the Retaining Wall

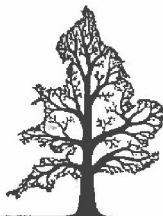
I understand that various solutions have been considered to deal with the collapsing structure which is currently a public hazard. Investigations have been undertaken by engineers and builders to determine the nature of the retaining structure and it has been concluded by qualified structural engineers that the current structure has failed, cannot be repaired but needs to be removed and replaced. Any new structure needs to be suitably robust to both retain the height of the earth behind it and resist the pressure of the tree roots to crack once more. In order to achieve this aim a scheme has been drawn up to span a reinforced concrete retaining wall, faced in brickwork and with a suitable compression zone behind it, from side to side of the garden with mass concrete bases at either end to weigh back this entire structure. Any existing wall foundations are unsuitable to be built off since they clearly do not serve a starting point for a structure to hold back any thrust out towards the pavement. A piling solution was considered but it has been confirmed by the recent exploration that these piles would effectively cut through all the roots behind the wall and severely affect the health and stability of the tree.

The wall thickness required to retain the garden, to allow protection of the roots and to give suitable room for construction has been confirmed as clearly in excess of the space available to the current roots.

The distance between the root-flare and the inner face of the retaining structure measures 550mm. Taking into account the lean of the wall and its thickness, I calculate that the horizontal distance between the root-flare and the front of the new retaining structure shall be 630mm (or less). The inner face of the retaining structure would therefore be located 220mm (or less) from the edge of the root-flare. That is 330mm closer to the tree than the inner face of the existing structure currently is. The volume of soil that would need to be cut will contain large buttress roots that this tree depends on for stability. Cutting through these roots would have a major detrimental impact on the health and longevity of the tree. It would also affect its stability and the tree would present an unacceptable risk to members of the public using the adjacent footway and highway.



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Furthermore, it is not possible to install such a structure without excavating some of the soils beyond. Even a piled type solution would require the removal of the existing foundations. This would require undermining the stem of the tree and half of its buttress roots. A non-piled solution would require a similar extent of excavation.



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I have considered the possibility of safely retaining the tree during the construction process by propping or guying. The problem here is that no engineering solution can avoid cutting through many of the large roots that currently run alongside the inner face of the retaining structure (see Photographs 4, 5 and 6) and the buttress roots close to the stem base. This is because the existing structure is essentially too slender and is leaning. Large buttress roots and structural roots will inevitably need to be removed to install any vertical structure that is thicker than the existing one. Therefore, no matter how carefully and sympathetically the structure were to be installed, the stability and health of the tree would be affected over the longer term, not just during the construction process.

Recommendation

Based on a considered analysis of all options, I recommend that the horse chestnut is removed before any further excavation or root disturbance is undertaken. It would be prudent to remove the tree at the earliest opportunity, taking into account its tree protection status (see below).

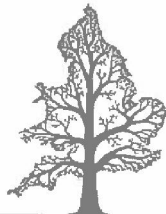
Protection Status

We understand that the horse chestnut is protected by a tree preservation order so you will need to liaise with the local authority in order to gain consent for tree removal. The local authority may require you to plant a new tree. If you replant with the same species (or one with a similar size at maturity) we recommend that you plant at least 2.5m from the retaining structure.

Signed



Ivan Button N.C.H. (Arb), FDS (Arb), BSc. (Hons), P.G.C.E. M. Arbor. A.
Principal Consultant, Director

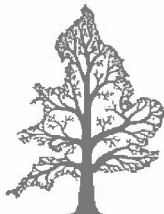


Appendix 1: Qualifications and Experience.

This report was written by our principal consultant Ivan Button who has the following resume:



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I worked within the construction industry and as a teacher before beginning my career in arboriculture. I obtained my original honours degree from Leeds University followed by a Post Graduate Certificate of Education from The University of Wales. In 1996 I began studying arboriculture at the University of Lincoln and became a member of the Arboricultural Association. I then managed a local Arboricultural Consultancy for one year before establishing and managing *Apple Landscapes*, a tree surgery & landscaping business until 2005.

From 2005 – 2008 I worked at a consultancy approved by the Arboricultural Association and assumed a senior role responsible for five consultants. In 2008 I was awarded a distinction after completing a foundation degree in arboriculture at the University of Lancashire. Since then I have been the director and principal consultant of *Crown Consultants Ltd* and have acted as Tree Officer for Barnsley Metropolitan Borough Council. I am LANTRA accredited Professional Tree Inspector and am able to undertake all levels of tree inspection. I regularly attend courses as part of my continued professional development to keep abreast of current technology and best practise.

I have produced thousands of specialist reports relating to all aspects of arboriculture for a range of clients including local authorities, estate managers, developers, planning consultants, loss adjusters, lenders, insurers, solicitors and home owners.

I am trained and licensed in QTRA (Quantified Tree Risk Assessment). I am a member of the Consulting Arborist Society and listed within their areas of professional expertise for QTRA and as an Expert Witness. I have undertaken professional expert witness training provided by *Bond Solon* and have been registered as a Sweet and Maxwell Checked Expert Witness since 2009. I am a professional member of the Arboricultural Association and the International Society of Arboriculture.

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Appendix 2: Photographs.



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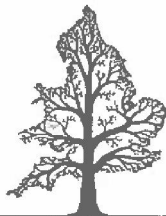


Photo 1. Tree in relation to road.



Photo 2. Root-flare in relation to retaining structure.



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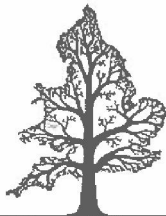


Photo 3. Tree in relation to the Retaining Structure

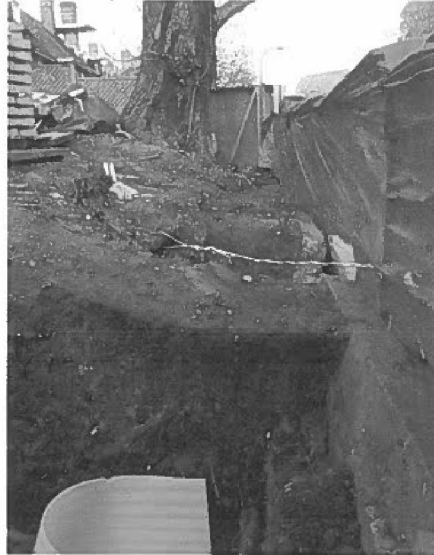


Photo 4. Large bundle of large roots immediately behind the existing retaining structure



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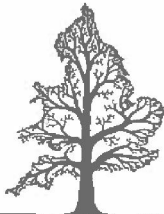


Photo 5. Large bundle of large roots immediately behind the existing retaining structure.



Photo 6. Very large root just behind the retaining structure.



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Photo 7. Previous excavation.



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Site Sketch, Ref - CCL 9292a TLP.

