Tree Hazard Report

1 EXECUTIVE SUMMARY

1.1 This report is to assess the Horse chestnut tree for its health and any potential hazards. Also, to recommend future management procedures.

1.2 This report was commissioned by Mr Atkinson of Chestnut Cottage, the Vale of Health, London NW3 1AZ.

2 TERMS OF REFERENCE AND SCOPE OF REPORT

2.1 This report is a visual assessment of *Aesculus hippocastanum* situated at the front of the property

2.2 Visual inspection was carried out on 14th August 2015. There is to be a follow up aerial inspection which will be added to this original report.

2.3 The visual inspection and the report were conducted by Simon Causer.

2.4 Simon Causer has fifteen years' experience as a qualified arborist, covering all aspects of tree work (including working in partnership with local authorities and subcontracting). He has also acted as an expert witness in a litigation case. He is currently studying for the Technician's Certificate in Arboriculture. In addition, he has taken part in a report writing course under instruction by D. Dowson of Tree Life Arboricultural Consultancy Ltd.

3 LIMITATIONS OF REPORT

3.1 Trees and shrubs are living organisms whose health and conditions can change rapidly. The conditions, health, and safety of trees should be checked at regular intervals. Thus, any recommendations and conclusions can only be valued for one year.

3.2. The report reflects the day of inspection: work to trees or property undertaken after this time will not be reflected in this report. Any tree works undertaken as a result of advice from this report should follow British Standards 3998:2010.

3.3 Assumptions have been made of soil types as set out by Dr. Peter Hobbs of the British Geological Survey Unit at Keyworth. Soil testing can be done in a supplementary report if required.

3.4 The tree has a tree preservation order (T.P.O. T15-H-CHES) this means it has been singled out as a tree of amenity value to the area, having historical and specialised value to its situation. Any works to the tree would need permission from the local authority, which would need to be justified. According to Camden Council, the tree has had 2 major reductions in the last 10 years.

4 THE SITE

4.1 The property stands at the end of single road, which is a dead end that borders Hampstead Heath. The road has low use. However, there are parking bays that are frequently used by dog walkers and local residents. There are 2 other properties adjacent to the tree.

4.2 Both the properties and two parking bays fall into the target area, if the tree were to have a castrophic failure.

4.3 The tree stands on the northern border of the property boundaries. Historical research of the area of the house revealed that, "The enclosure, which was leased by the lord of the manor like demesne, had by 1808 become the site of a varnish factory. (fn. 8) A chimneysweep had by then built a cottage adjoining it to the north, possibly Chestnut Cottage, which was later rented from the lord by a chimneysweep." [A History of the County of Middlesex: Volume 9, Hampstead, Paddington. Originally published by Victoria County History, London, 1989]

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4.4 According to the British Geological Survey Solid and Drift Edition 1:50 000 series, the underlying strata in the locality of the site may well be London Clay (Triassic). It is therefore safe to assume that it has a high plasticity level. The definitive soil type can only be identified by further analysis.

4.5The area around the tree is flat brick and on the northern side butts up to the boundary wall. The flat bricks have an uneven spread and undulate, which suggest buttress root spread, which has caused direct lifting of the bricks.

The blue lines indicate the probable direction of the buttress roots.

5 THE TREE

5.1 The tree is a Horse Chestnut *Aesculus hippocastanum* .

- It stands at 15 metres high.
- The width of the butt (measured 1.5m up the trunk) is approximately 4.3metres circumference.
- The crown spread is 9 metres.
- The age of the tree could be estimated to between 200-250 years old and probably is of a similar age as the property.
- The morphology of the tree suggest the tree has peaked in its growing and is in a natural decline.

5.2 The overall vigour and vitality of the tree is good.
5.3 The butt has the look of a “bottle butt”: this is where natural swelling of the lower butt occurs as a way to compensate for an interior problem. This has developed due to the tree trying to optimise its position and active growth to seal off decay.
5.4 There are many cavities and lesions on the lower butt area.
5.5 The trunk splits into twin stems the point of 2 metres up the stem. This has been described by Claus Mattock as a compression fork which has the potential for mechanical failure.
5.6 As you move up from the crotch to the crown there are pruning cuts that have occluded well in the main crown. There was signs of epicormic response to the pruning work.
5.7 The foliage on the crown is full but does appear to show signs of leaf miner *Cameraria ohridella* this can have an effect on the trees ability to photosynthesise , which has an effect on the trees ability to creating energy in the form of starch, which is used in growing and sealing off wounds.
5.8 There are stains in the lower large branches and the stem, which could suggest a weeping canker. Cankers are areas of decay or dysfunction which can result from bacteria, fungal infection or vectors of infection. The weeping is a result of the tree exuding fluids in response to the infection and the fluid dries resulting in a stain. Typically in chestnut, the stains can be red or black.

6 DISCUSSION

6.1 Upon investigation of the butt area there are many points of decay and dysfunction, resulting in a large cavity (see photo 3-4).

Photo 3

Photo 4

6.2 On tapping with a hammer around this area, it became apparent that a large portion of the easterly side of the butt is either hollow or has developed dysfunctional heart wood.
6.3 As has been already described, the stem splits into 2 major conjoined limbs. This is where the tree has grown together forcing bark against each other and has the potential to compromise the structural integrity of the specimen.
Photo - shows a visual demonstration of the extent of the decay in the butt. The right side of the stem sounded hollow and had signs of dysfunctional heartwood.

6.4 On the boundary wall there was stepped cracking in the wall that had been re-pointed suggesting incremental annual growth was causing direct damage to the wall.

6.5 As a species chestnut are prone to multiple infections especially in older age.

6.6 Weeping or bleeding canker has been described by The Forestry Commission "on the increase" mainly due to two phytophthora pathogens. The main agent being bacteria, *Pseudomonas syringae* pathovar *aesculi.*

6.7 This pathogen infects the bark around the trunk and main branches. As it spreads, it cuts off the water supply to the crown; and when it completely encircles the trunk, the tree will die.

6.8 See Photo 5 – for an image of a leaf showing leaf miner damage.

6.9 The tree's age would suggest that there is potential for many latent infections inside the tree system. The more the tree is attacked the more chance of manifestation of the potential faults or pathogens, which would thus send the tree into decline.

RECOMMENDATIONS AND CONCLUSIONS

7.1 The tree has historical value, so retention should be the ultimate aim
7.2 Retention of the tree should only retained without risking the stability of the tree and any potential hazard that could occur, due to decay or wind loading to the crown which might cause major branch failure.
7.3 The spread of the crown reaches across the garage and parts of the property. Any failure to these limbs could be catastrophic and the potential of risk of health. There is also potential risk for users of the road, such as dog walkers and local residents.
7.4 It is recommended that the tree's major limbs be reduced in order to limit the strain by wind loading.
7.5 This reduction should be phased over several years so as to mimic the natural retention of the tree.
7.6 Monitoring should be bi-annual. Recommended times would be in the autumn when fruiting bodies will develop (so giving indicators of fungal infection) and in spring (around the flush of leaves giving an indicator of vitality).
~~7.6.1 The proposed pagoda should have no effect on the health of the tree if there is a 1.5metres clearance from the height of the pagoda to the crown.~~
~~7.7 The proposed enlargement of the garage door , including excavations near or around the roots' sphere, should all be done by hand and with care . The contractors doing the work should be briefed on the extent of potential damage to the health of the tree by damaging or severing roots . If necessary the work should be over watched by an industry recognised qualified person .All works should follow guidelines set out in British Standards 5387:2012 Trees in relation to design, demolition and construction – Recommendations.~~
7.8 If monitoring suggests dramatic decline, then it is recommended that further investigation with decay detection equipment takes place in order to give more evidence of the soundness of the structure.

DATE 15/08/2015 SIGNED SIMON CAUSER

8 SUPPLEMENTARY AERIAL INSPECTION

8.1 On Tuesday 1st of September 2015, I performed an aerial inspection of the inner crown of the tree.

8.2 My attention was focused on the central limb which from the ground appeared to be an occluded wound - perhaps from a ripped out limb or removal by previous arborists. Photo 6

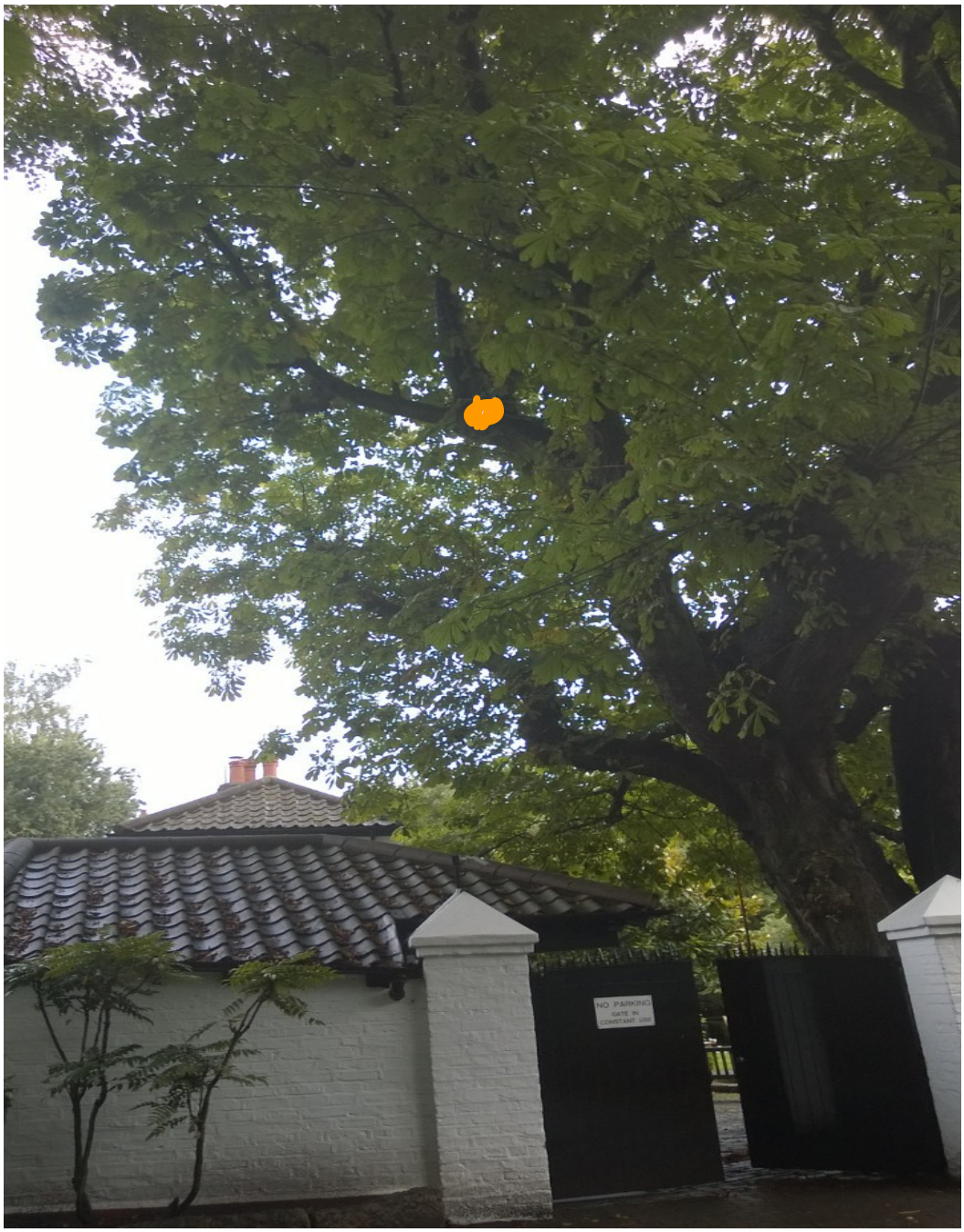
The blue dot in photo - shows the centre most limb. As can be seen it comes to an abrupt stop with 2 large limbs attached to either side (orange and red spot).

PHOTO 7 depicts the view from above focusing on the centre limb (the blue line shows the abrupt stop of the removed limb also giving an idea of its size).
The orange spot limb is of concern as the attachment to the centre is close to the dysfunctional wood from the blue centre limb. As can been seen from photo 6 the orange spot limb has put on adaptive growth to compensate for the weight of itself ,however the union of orange to blue is at best adequate . The target of the property can be seen from Photo 7. The orange spot limb from that point extends approximately 5-7 metres up over the property its weight is considerable. Photo 8 shows a close-up of that attachment.
Photo 8

The orange line represents the approximation of the attachment point from the orange limb to the right and the blue centre blue limb. This union has overlapping crevices and entry points which are potential fault lines. These could rip out due wind-loading on the above crown or other mechanical failure.
The red-spotted limb also has potential issues, which in the unfortunate circumstances e.g extreme weather patterns ,could have catastrophic consequences.

Photo 9 shows cavities and areas of dysfunction. It also shows the neighbour's property as potential target. There is another cavity on the underside of this limb. Both theses faults have been highlighted by the yellow lines.

Photo 10 and 11 show the extent of the overhang from the limbs that have been mentioned.



CONCLUSIONS

After climbing the tree my conclusion from the visual report remain the same. Weak attachments, unions and areas of dysfunctionality are in critical positions whose failures could be catastrophic and remain a risk to health and property. Recommendations are the same as before: phased reductions of the major limbs to elevate the strain and force caused by wind-loading of the upper-crown.
The species as a whole is renowned for structural weak timber and the potential for infection. Being pro-active in the management of the tree offers the best chance of retention.

S. Causer.
01/09/2015

BIBLIOGRAPHY OF REFERENCE

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Claus Mattheck and Hege Breloer, *The body language of trees* (TSO, 2010)

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Bleeding canker of horse chestnut: Management Forestry Commission