

Arboricultural Assessment of 21 Peverells Wood Avenue, Chandler's Ford, EASTLEIGH, SO53 2AX

Carried out by Matthew Rowden for Phil Willis, Applicant

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3. Instruction

This report is to survey three ash trees on the site for the potential to cause damage and/or harm for insurance and liability. I refer to the current guidance set out within NTSG Common sense risk management of trees 2011 to enable the homeowner to have discharged their duty of care.

The risks that I have assessed are: Likelihood of damage to property (indirect or contact), tree failure through structures, and personal harm or injury. I have been instructed by Mr Phil Willis, applicant and homeowner.

4. Limitations

This survey is valid for 3 years (adhering to the guidance set out in NTSG 2011). I must be kept in direct supervision of the site at all times in regards to all arboricultural matters in order for the findings in this report to remain valid.

The site was inspected using the VTA method as outlined in Mattheck and Breloer 1994. No detailed decay detection has been carried out.

No soil analysis has been carried out: assumptions have been made based on data from the BGS, and the species that grow in that area.

5. Site details

The site is a 0.2Ha plot of land with one main structure on it. The site is heavily wooded to the north aspect.

The soil conditions are listed by the BGS as: "Wittering Formation - Sand, silt and clay. Sedimentary bedrock formed between 56 and 41.2 million years ago during the Palaeogene period."

The site sits right on the edge of a London clay formation too.

6. Legal restrictions

The trees are within a group TPO, ref: 191-E.

7. Proposals

This report aims to establish whether the trees require work within the next 5 years, 1 year, critically (as soon as reasonably practicable), or no work whatsoever. It aims to discharge the duty of care that the landowner has to ensure that their trees are as safe as reasonably practicable, and to instil a cyclic formal re-inspection schedule every 3-5 years in line with NTSG common sense risk management of trees 2011.

8. Drawings and documents

The client has not provided drawings and documents for the purposes of this assessment. I have obtained one from the BGS and have annotated the trees on the map.

9. Summary

The three surveyed ash trees exhibit very early stages of ash dieback disease, which on its own would not be grounds to fell them. However, the most westerly tree exhibits a significant cavity at the base that renders it structurally unstable. The loss of this tree will then render the retention of tree 2 not viable, due to included unions at the base that are likely to fail due to changed wind vectoring when tree 1 is felled (tree 2 sits in the lee of the prevailing wind to tree 1). Tree 3 may be retained, but requires re-coppicing.

10. Findings (please see appendix 1 for specific details)

T1:

Rootplate and buttresses:

- i. Swollen buttresses indicative of mechanasensis in response to hollow at base.
- ii. Manual probing of cavity (250 x 200mm, N aspect at ground level), shows depth of decay extends 900mm deep into the main stem at ground level (diameter at base of 1150mm).

Main stem

- iii. No defects present.

Crown

- iv. Some major deadwood throughout the canopy at 12m.

Canopy vitality

- v. The canopy exhibits reasonable vitality, but overall the tree is in the early stages of ash dieback disease (class 2).

T2:Rootplate and buttresses

- vi. No comments.

Main stem

- vii. The stem exhibits three included bark unions at 1m in height.
- viii. The tree sits to the north east aspect of tree 1, which is unlikely to be retained. This is the lee of the prevailing wind.

Crown

- ix. Some major deadwood throughout the canopy at 7, 8 and 10m.

Canopy vitality

- x. The canopy exhibits reasonable vitality, but overall the tree is in the early stages of ash dieback disease (class 2).

T3:

- xi. This tree is a lapsed coppice stool that extends to the north of the other trees as it has been suppressed. These limbs extend a long way over neighbouring properties, and visually the tree is of very poor form.
- xii. As the tree has been maintained as a coppice historically, there is no reason why it should not flourish if re-coppiced, especially with trees 1 and 2 removed.
- xiii. The canopy cover is good and the tree falls into class one in terms of the scale of ash dieback disease.

11. Analysis

- i. Tree 1 is the main issue with the site, and exhibits a cavity of high significance.
- ii. When measured, the cavity appears to extend 900mm deep on a stem that is just 1150mm diameter at the base: this align with Klaus Mattheck's failure criteria of 0.3: the ratio of sound wood to overall stem radius comes in at 0.22.
- iii. The t/R ratio is a somewhat controversial method that shouldn't really be applied to stems over 900mm diameter, so I will also apply the Bartlett formula to it and see if it meets that failure criteria (a strength loss >33%).
- iv. The input figures for the formula $SL = [d^3 + r(D^3 - d^3) \times 100] / D^3$ are:
 - i. SL= Strength loss as a %
 - ii. d (decayed timber diameter) = 900
 - iii. D(whole timber diameter)=1150mm
 - iv. R (ratio of open cavities to stem circumference)= 250:3613= 0.07
 - v. Therefore, $[900^3 + 0.07(1150^3 - 900^3) \times 100] \div 1150^3 = 51.6\%$
 - vi. With the above in mind, retention is not viable.
- vii. This leads on to tree 2: The basis for union strength testing really comes from extensive work by Farrell and Kane 2008, Smiley 2003, and Slater 2010 - present.
- viii. Based on the formation of the branch unions at 13m, these limbs fall into the category of "included bark" unions.
- ix. These are identified by Brian Kane in a study in 2008 as limbs where the union is not consolidated properly, with the branch collar has not fully formed around the limb, leading to the limbs failing under a considerably lighter load than expected (around 50% weaker as a co-dominant stem).
- x. Given that the loss of tree 1 is going to lead to a significant change in wind vectors moving through the woodland group, I regard the failure of large limbs from tree 2 exceptionally foreseeable.
- xi. Therefore, the risk posed by these limbs must be controlled: In general, ash trees reduce well, but in this instance, with the prevalence of ash dieback, one must ask: is there any point? There is little point in reducing a tree that may be expected to have a lifespan for <10 years.

12. Conclusion:

The trees on the site are not high value, even if it is tragic that so many ash trees are being felled. The loss of tree 1 will inevitably have a knock on effect to tree 2, and the amenity of tree 3 may be improved by re-coppicing it. Some significant research has been carried out by the Arb Association and the Forestry commission on the effects of coppicing as means of rejuvenating ash trees like this, and I see no reason not to implement it here.

The felled trees must be replaced: suggested species are 1 x *Fraxinus chinensis*, and 1 x *Quercus robur*. 8-10 standards will suffice.

13. Recommendations

- i. Fell trees 1 and 2. Coppice tree 3 to ground level.
- ii. Replace with both of the suggested species, 8-10 standard, bare root or airpot.

A handwritten signature in black ink, appearing to read 'M Rowden', is written over a solid orange horizontal line.

Matthew Rowden ABC ProfDipArb L6, BTEC NatDipArb L3

14. References

- a. BS3998:2010
- b. Modern Arboriculture, Alex Shigo
- c. The body language of trees, Dr Claus Mattheck
- d. Plant Biomechanics, Karl Niklas
- e. NTSG Common sense risk management of trees 2011
- f. Beyond Hortlink. N. Hipps 2004

Appendix 1 - Tree survey schedule

Tree no. on plan	Species	Ht (M)	Crown spread (M) N E S W	Stem dia. @1.5m (mm)	Life stage	Estimated remaining contribution in years	General observations Physiological condition- P Structural condition - S	Preliminary management recommendations	Likelihood of causing damage/harm
1	<i>Fraxinus excelsior</i>	17	5 7 8 8	490	M	<5	P- Fair S- Poor Early signs and symptoms of ash dieback disease, with minor tip retrenchment and major deadwood to NE aspect at 12m. Swollen buttresses indicative of mechanasensis in response to hollow at base. Manual probing of cavity (250 x 200mm, N aspect at ground level), shows depth of decay extends 900mm deep into the main stem at ground level (diameter at base of 1150mm).	Fell	High
2	<i>Fraxinus excelsior</i>	18	7 9 9 8	660	M	<10	P- Fair S- Poor Early signs and symptoms of ash dieback disease, with minor tip retrenchment and major deadwood in upper canopy at 7, 8 and 10m S aspect. Included union at 1m between tri-dominant stems of high significance. Due to the potential loss of tree 1, these unions are likely points of failure that will pose a significant safety risk.	Fell	Moderate.

Tree no. on plan	Species	Ht (M)	Crown spread (M) N E S W	Stem dia. @1.5m (mm)	Life stage	Estimated remaining contribution in years	General observations Physiological condition- P Structural condition - S	Preliminary management recommendations	Likelihood of causing damage/harm
3	<i>Fraxinus excelsior</i>	8	11 7 1 10	350	M	>10	P- Fair S- Poor Early signs and symptoms of ash dieback disease, with minor tip retrenchment. Tree is an old coppice stool that has been allowed to lapse, with elongated growth extending to N aspect. Amenity of tree may be improved by re-coppicing to ground level.	Coppice to ground level.	Low

Survey schedule key

- Tree ID: Refers to numbers as shown in the tree location plan.
- Species: scientific name
- Height (measured in meters)
- Crown spread (measured in meters at the points of North, South, East and West). Where “#” is used as a suffix, the measurements are approximate.
- Stem diameter measured at 1.5m height in mm.
- Life stage: Young (Y) (small trees at a very early stage of their growth), young mature (YM)(larger trees at an early life stage with the potential to still grow considerably larger), Mature (MA)(trees which have reached their maximum size and are self sustaining at the point), Over mature (OM)(trees that are beginning to decline and starting to die back from the tips), Veteran (V)(trees that are rapidly in decline and steadily losing canopy spread), Dead (D)
- Estimated remaining contribution in years: Until such a time as any residual amenity is lost.
- General observations - a visual assessment of the physiological and structural condition of the tree, classed as :Poor, fair, good, dead, decline. Physiologically refers to the vitality and vigour of the tree; Structural refers to the presence of physical defects within the tree's structural makeup. For example, a multi stemmed tree from a lapsed pollard with multiple defects in those unions, but with good vitality and good leaf cover would be classed as physiologically good, but structurally poor.

- Preliminary management recommendations - recommendations to maintain the tree as part of the proposals, or assessing whether its retention is viable, whether it be the suggestion of aerial inspections, remedial pruning, or detailed decay inspections.
- Likelihood of causing damage/ harm: None, low, moderate, high and critical. These mean that respectively, the recommendations are to be actioned with no time scale and within 5 years (green canopy spread), 1 year (blue canopy spread), 6 months (red canopy spread). Trees to be felled with have the canopy spread denoted in a red dotted line.

Appendix 2: Tree location plan

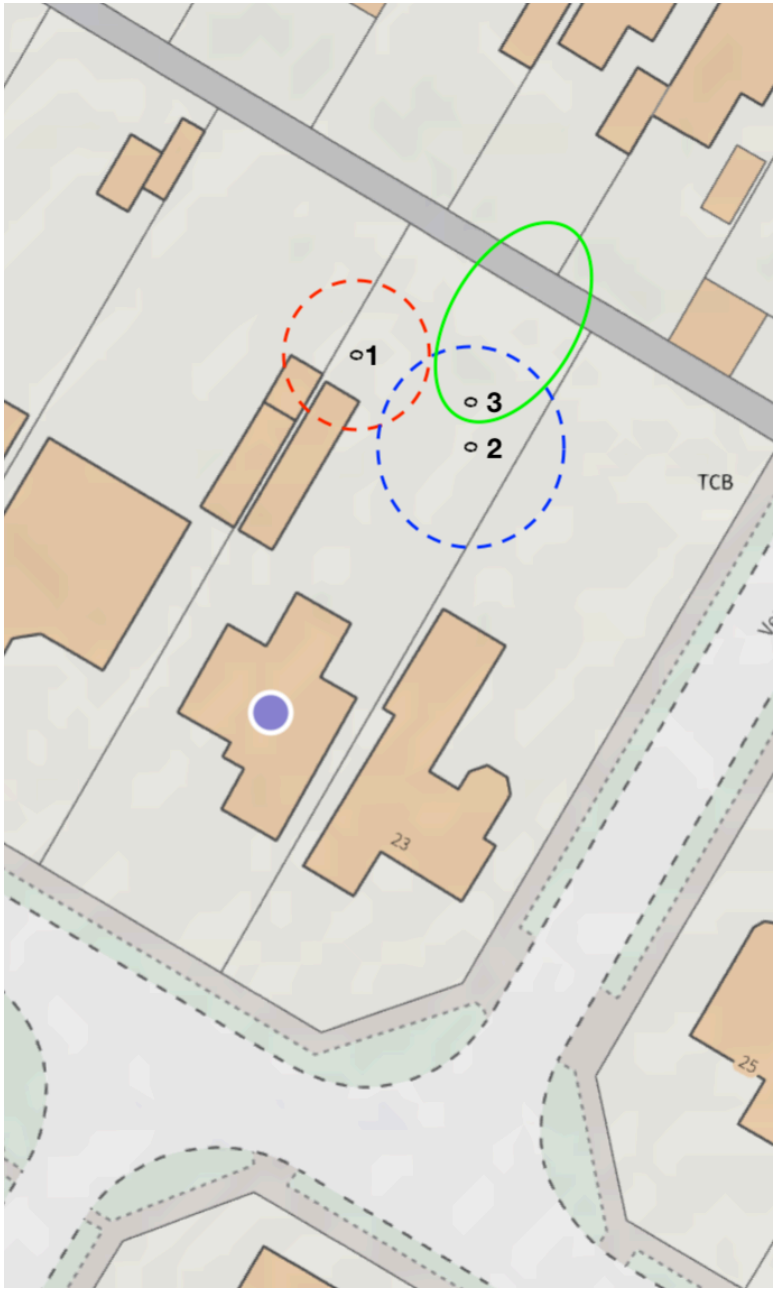




Image shows the decay extending 900mm deep into the stem at ground level.