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CBAxxxx v1

(client)

PICUS SONIC TOMOGRAPHY INVESTIGATION REPORT

Site:

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CBA Trees

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Client: xxxx

Site: xxxx

Principle Consultant: xxxx

Date: xxxx

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APPENDIX

1.0 INTRODUCTION

1.1 CBA Trees was instructed by xxxx to undertake a Visual Tree Assessment (VTA) of one Pedunculate Oak (*Quercus robur*) tree that grows in the rear garden space.

1.2 The primary focus will be a Visual Tree Assessment (VTA) to assess the health and safety of the tree and to recommend appropriate options for ongoing management in respect of any actual safety risk that it may pose to life and property (i.e. for sound arboricultural management reasons in accordance with current industry guidelines).

1.3 The following points should be noted:

- The visual assessment has been completed from ground level only, with the aid of binoculars, plastic headed mallet and metal probe (as appropriate). Whilst it is usually possible to assess a tree adequately from ground level it should be noted that this cannot include a full assessment of the canopy.
- This assessment is valid for a period of one year from the date of this report. Trees are dynamic living organisms and should be surveyed regularly, especially where there is public (third party) access or there are targets such as property within the zone of influence.
- The statements made in this report do not take account of the effects of extreme weather, or when there is any significant change in site conditions, pruning or other unspecified works, vandalism or accident, whether physical, chemical or fire.
- CBA trees cannot therefore accept any liability in connection with these factors, nor where prescribed work is not carried out in a correct and professional manner in accordance with current good practice.

1.4 The scope of work undertaken also included a more detailed investigation of the Pedunculate Oak tree with the aid of the Picus Tomograph (this uses sound waves to interpret the internal wood tissue) following the initial visual assessment, to ascertain the internal condition of the tree.

2.0 SITE DESCRIPTION

2.1 The site is a children's nursery set within a residential area. The front of the site is dominated by a graveled drive/parking area with the nursery itself located fairly centrally within the site.

2.2 The tree is located on the north western side of the rear garden.

2.2 The tree stands within a fenced off part of the nursery grounds, with play areas to the eastern and south eastern sides of the tree. There is a brook to the west of the tree which appears to define the site boundary.

2.3 It is understood from the client that the tree is protected by a Tree Preservation Order served and administered by xxxx Council.

3.0 TREE DETAILS

3.1 The Pedunculate Oak (*Quercus robur)* was inspected on the xxxx. At the time of the initial assessment it was raining, whilst at the second visit the weather was overcast with sunny spells. The tree is considered to be of a mature age class and stands approximately 18m tall; the single trunk has a diameter measurement of 1030mm at 1.5m above ground level.

Photograph 1:
Showing the Oak from the eastern side

3.2 Roots and Lower Trunk

The tree grows in an informal area within the rear garden/play area within ground that is free from built form.

There were no obvious signs of any significant ground disturbance at the time of the visit.

It was noted that a secondary or subsidiary stem had been historically removed with the remains of a decaying stump to the eastern side of the tree along with well-formed buttress roots at the base of the tree. Small bark wounds were present on several of the buttress roots.

There is an area of wounding at the base of the trunk on the south west side measuring approximately 450mm wide and 800mm high. From this wound, a frothy, slime exudate was evident with a strong smell of stale alcohol. These signs indicate that the Oak has what is known as Frothy Oak Disease.

Photograph 2:
Showing the area of wounding on the south west side of the trunk

The froth is a result of wild yeasts infecting sugar rich sap seeping from damaged bark. The cause of the damage can vary from localised bark killing by fungi such as Honey Fungus to simple bark cracks. The frothy slime is different to bacterial wetwood as the frothing is considered to be relatively superficial within the bark and cambial region and persists, generally for a short period of time in the summer.*

*Forest Research pathology Advisory Note 12 – Frothing Oak

When the lower 2.0m of the trunk was tapped with a plastic headed mallet, the percussion sounded solid for the majority of the trunk suggesting that there is little, if any, decayed wood, hollows or cavities present in this section that would suggest the tree is compromised. The only area indicative of decay or loose bark was that of the immediate area around the wounding.

3.3 Trunk and Structural Branches

Old pruning wounds on the trunk and structural branches are present from past management; some of these are occluding and some appear to have minor decay present.

3.4 Crown

The crown of the Oak is weighted and bias towards the east due to surrounding trees and the Oak growing towards the light to maximise the photosynthetic capability of the tree.

The extension growth and bud development appeared to be in a good to fair condition in terms of the amount of growth rate of the tree in the lower crown. However in the upper crown, dieback and poor extension growth was present which suggests that the tree is under stress.

Old pruning wounds within the crown are present from past management; some of these are occluding and some appear to have minor decay present.

At the time of the inspection there were large (>50mm) dead branches within the crown which one would expect of a tree of this size and age.

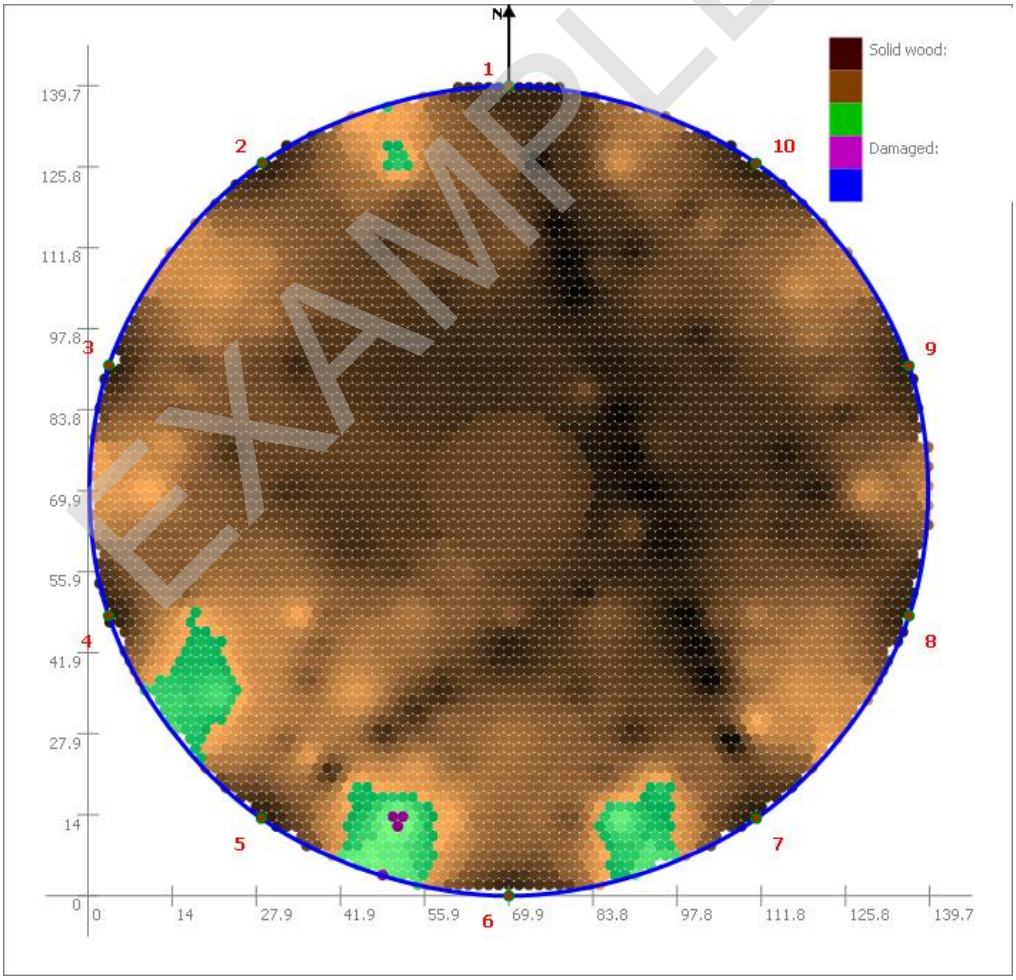
4.0 TOMOGRAPH INVESTIGATIONS

4.1 A Picus Tomograph test was completed on the base of the trunk to provide more information and to provide a better understanding of the extent of the internal wood tissue.

4.2 The Picus Tomograph measures sonic waves from given points through sensors. The differing velocities of these waves help to interpret the wood density of a cross section of the tree (sound waves generally travel faster through sound or solid wood tissue and slower through decayed or dysfunctional wood tissue). The time taken for the sound waves to cross the wood tissue are then calculated and interpreted to produce a colour coded image (tomogram) of the internal wood tissue. The differing colours indicate the relative sound wave velocity through the cross section of wood tissue to give a visual guide to any decay.

4.3 On assessment of the lower trunk and without any obvious external signs of areas of decay it was determined that the best place to use the Picus Tomograph was at approximately 300mm above ground level.

Figure 1:
Showing the tomogram taken at approximately 300mm above ground level



- Dark brown represents the highest velocity and therefore shows areas of sound wood.
- Light brown or tan coloured areas represent the interface between sound and dysfunctional wood tissues, probably associated with Reaction Zone Barriers set up by the tree but are generally thought to be sound.
- Green indicates wood of lesser density or dysfunctional wood tissue. This may be wood whose density is reduced but not yet fully decayed i.e. wood with early fungal infection.
- Pink and blue indicates areas of decayed or severely dysfunctional wood tissue.
- The red numbers indicate where the sensors were positioned with No.1 at the north cardinal point.
- The graph axis represents the cross-section dimensions in centimetres.
- The tomogram represents a cross-section of the tree at one level only, solid wood and decayed wood may differ above or below the level of measurement.

4.4 This tomogram suggests that there is a good correlation between the solid percussion sound testing and the lack of any significant decayed wood tissue indicated on the tomogram.

4.5 It also suggests that there is a good correlation between the area where the wound is present (approximately between sensors 4 and 5) and an area of dysfunctional wood tissue with minor pockets of decay forming.

4.6 The tomogram suggests that the majority of the trunk has healthy wood tissue as indicated by the tanned and dark brown colour. The tanned colour, whilst this is considered to be solid or sound wood, it is perhaps not 100% and considered to be an area of reaction wood or interface between dysfunctional wood tissue and sound wood tissue.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 The tree is located on the north western side of the rear garden. The tree stands within a fenced off part of the grounds, with play areas to the eastern and south eastern sides of the tree. There is a brook to the west of the tree which appears to define the site boundary. Residential properties and garden space surrounds the tree and should the tree fail in the typical UK winds, the south westerly winds would most likely mean the tree falls towards the garden space of the nursery and neighbouring property.

5.2 The minor dieback that is present in many of the surrounding Oak trees and the minor decline in the crown of this Oak is this likely to be caused by a similar issue rather than as a direct result of the Frothy Oak Disease at the base.

5.3 The wounding at the base of the Oak appears to be superficial and with the evidence available at the time of this report, it is therefore our opinion that the tree does not require felling at this time.

5.4 Currently, the concern for this tree is not that the tree will collapse in part or in whole but will continue to show signs of dieback and decline along with the nuisance factor of insects being attracted to the sugary froth.

5.5 It is thought that the main time of the froth to appear is in the summer months when the pressure in the tree moving nutrients and water around are high. This also coincides with the time that the outdoor area of the nursery is most likely to have increased activity. There is no treatment to kill off infection, therefore the only options are:

- Whilst the Oak is already fenced off from the main area of use this will reduce the likelihood of any persons being stung by insects that are attracted to the sugary froth. To further reduce the opportunity of insect stings and enabling a higher use of this area, washing down the froth during the summer months as required should remove or reduce the attraction of the surgery solution to insects. Specialist insect attractant traps could also be used if required.

- Symptoms of Frothy Oak Disease usually occur after a period of hot, dry weather, so water the tree deeply during these dry spells. Apply the water slowly to encourage absorption to a depth of 450 to 600mm. Water the entire area under the canopy of the tree.

- Cover the ground beneath the crown with a 75mm depth of mulch to aid in water retention.

- Removing the dead patches of bark will allow better air flow around the wound and give the tree an opportunity to produce wound wood. Whilst the tree is most likely too old to fully occlude the wound, giving the tree the opportunity to produce this new wood, give the area of wounding a chance to dry may reduce the frequency or rate of the froth produced.

5.6 An option in the longer term maybe to consider reducing the height of the tree and shorten the lateral spread by 2.0m, subject to Local Authority approval due to the legal protection afforded to this tree. However, this would not remove or control the symptoms at the base of the tree but allow the tree to potentially be retained for longer given the indicative signs of stress and decline with the minor dieback in the crown.

5.7 The Oak will need the deadwood removed from the crown if the tree is retained and this should be removed as soon as reasonably practical and could be completed at the same time the tree works at the site frontage are being carried out as the removal of deadwood does not need consent from the Local Authority just a polite notification of the intention to remove the wood prior to the work commencing.

5.8 We would recommend that the Oak tree is reassessed within a period of 2 years