Title:	Date:
Picus® Sonic Tomograph Tree Investigation	24 August 2023

Site Address:	Ref:
9 Mountbatten Road Poole BH13 6JE	PI/78123/AC

Client:
J Andrews

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Appendices

1.0 Terms of Reference

1.1 Treecall Consulting is instructed by the client to investigate the extent of internal decay in the lower stem of a holm oak tree at the site using sonic tomography and to provide a report based on the results that gives management recommendations to minimise risk to people and property.

2.0 Report Limitations

2.1 This report is based on the information received from the PiCUS Tomograph and arboricultural findings made at the time of the site visit. The recommendations are based on my experience and knowledge in arboriculture, details of which are in Appendix A.

2.2 The report is for the sole use of the client and was produced in line with the terms of reference. It should not be used for any other purposes or by any other parties.

3.0 Introduction

3.1 Context

3.1.1 The tree is a holm oak *Quercus ilex* which is situated adjacent to the southern boundary of the site and overhangs both the host property and the adjacent property to the south, 1 Pinewood Road, as shown below:

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3.1.2 The tree was visually inspected by Treecall Consulting on 28th June 2023 and fruit bodies of a decay fungus (*Ganoderma* sp.) were noted on the lower stem. This led to a recommendation to carry out further testing to determine the extent of any internal decay. This testing - which is the subject of this report - was carried out on 19 July 2023.

3.1.3 According to the BCP Council website, which was checked on 13 June 2023, the tree is protected by tree preservation order (TPO) ref. 85/98 and is referred to in the order as T1.

4.0 Method of Inspection

4.1 The PiCUS® Sonic Tomograph is an instrument for the detection of decay and cavities in standing trees.

4.2 Nails are driven through the bark, in a horizontal plane around the circumference of a tree and attached to sensors, which measure the time taken for sound waves generated by striking the nails to pass through the wood. The longer a wave takes to travel between sensors, relative to its speed through healthy wood, the more of an obstruction is present along that path and this usually indicates cracks, hollows or altered wood characteristics.

4.3 The software collates and interprets this information to display a cross section of the tree's stem showing the variations in speed of the sound waves in different colours. A brown or buff colour indicates good quality wood with insignificant strength loss. Purple, blue and white colours indicate progressively greater decay or dysfunction, leading to hollows at the white end of the spectrum. The green colours indicate wood of intermediate characteristics. Here there is likely to be some incipient decay, or the beginning of alterations to wood characteristics.

5.0 Observations and Test Results

5.1 Visual Observations

5.1.1 The tree is twin stemmed from ground level with the two stems touching up to 2m. The west stem divides again at 2.5m. The combined stem diameter at 1.5m above ground level is 115cm, with the west stem measuring around 70cm and the east around 50cm. The tree is 15m tall with a radial crown spread of 8m. There is an old stub left from the removal of a low branch above the root flare on the west side and large exposed roots spiralling anticlockwise. There is a single fungal fruit body in the fissure between the two stems on the north side and a column of five fruit bodies in the fissure on the south side. Crown vitality appears to be normal.

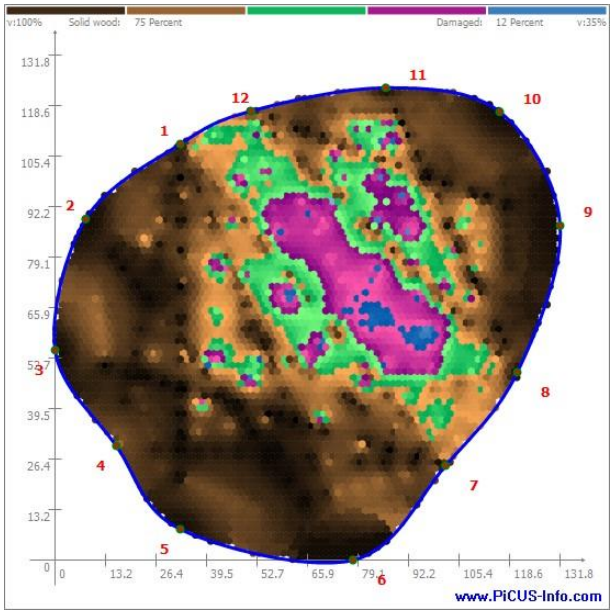
Fungal fruit bodies on north (left) and south (right)

5.2 Tomograph Readings

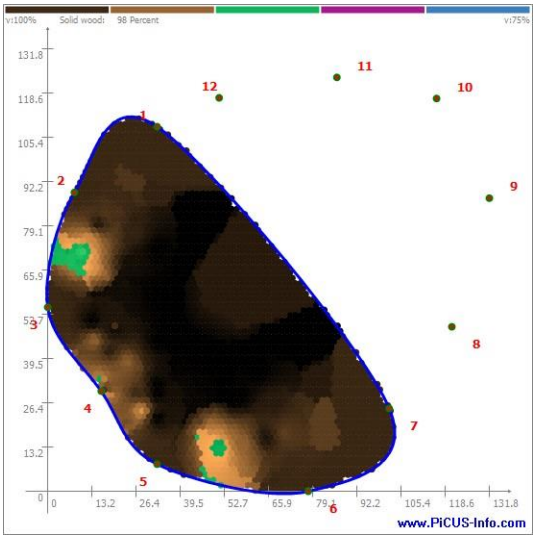
5.2.1 One reading was taken at 75cm above ground level. A total of twelve sensors were used with sensors 1-7 placed on the west stem and 8-12 on the east stem. The sensors were arranged in such a way that the individual stems could be analysed in isolation as well as viewing the combined cross-section.

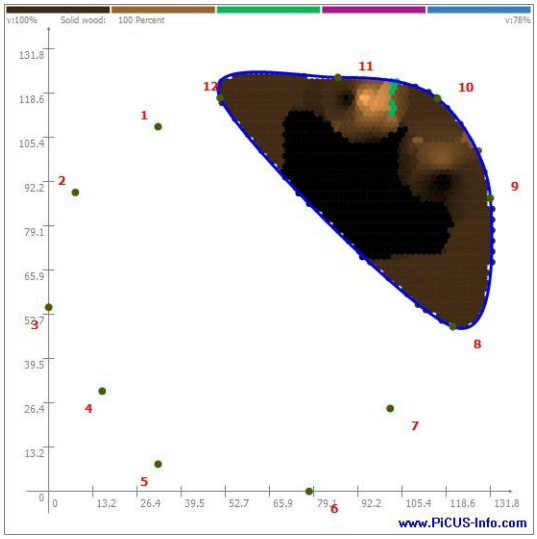
Height of tomograph reading on stem

5.2.2 The combined tomogram shows a main area of decay in the centre of the tree – where the two stems meet – with smaller areas of decay in both stems to the east and west. The decay shown amounts to approximately 12% of the total cross-sectional area of the stems.



5.2.3 However, when the data from the two stems is separated out by only including the measuring points on each stem individually, almost no decay is shown within the majority of each stem cross-section.





6.0 Appraisal

6.1 There is clearly some discrepancy between the extent of decay shown in the combined tomogram and in the tomograms for the two individual stems. As it was not possible to place any sensors between the stems the individual tomograms do not have any data for the central region, so this area is effectively absent from the individual images. However, they also do not show the same decay further into the stems where data was available. This is likely to be because in the combined tomogram the sound waves crossing from one stem to another were impeded by the stem union and this slower transit time erroneously shows up as decay when the wood is actually sound. As the individual tomograms are generated using only the sound waves passing between the sensors on the same stem, this issue does not arise.

6.2 Whilst there are deficiencies in both the combined and individual tomograms described above, it is still possible to infer a reasonable picture of the situation within the tree. It seems likely that there is a central area of decay at the stem union, as shown in the combined tomogram between sensor points 1, 6, 7, & 12 – which is what one would expect given the presence of the fungal fruit bodies in this area – but it is probably less extensive. The individual tomograms will be a more accurate representation of the interior of the stems in showing no significant decay so the areas shown either side of the central region shown in the combined tomogram can safely be discounted. Overall the amount of decay is probably no more than 10% of the cross-section of the tree stems.

6.3 Although *Ganoderma* are a group of fungi that can cause extensive decay in trees, often leading to stem failure, this tree does not appear to be significantly affected at present. Holm oak has a high resistance to decay and where fungi do colonise their progress through the wood is generally slow. It is therefore unlikely that the situation will quickly develop into one where it is necessary to prune or fell the tree for safety reasons.

7.0 Recommendations

7.1 Tree Work

7.1.1 No tree work is recommended at present.

7.2 Monitoring & Re-inspection

7.2.1 Tree health and condition can change over time and be affected by the environment; therefore, regular periodic inspections are needed to ensure any changes are identified and appropriate, timely action taken.

7.2.2 The tree subject of this report is recommended to be re-inspected in autumn 2025. This can be a visual inspection initially and this may prompt further internal testing, but it may not be considered necessary.

7.2.3 It is recommended that the trees are monitored following extreme climatic events such as floods or storms. Changes to the trees should be noted, including uplifted roots, raised soil around the tree base and cracked or broken branches that are suspended in the crown. Monitoring should also look out for fungi on or at the base of trees, the presence of pests or disease on stems, branches or foliage or any other changes that suggest the current situation needs reassessing. Monitoring can be done, in the first instance, by workers and staff on site and does not, necessarily, involve a professional arboriculturist.

7.2.4 Where damage, instability or other issues arise and cannot be fully assessed or dealt with by staff then Treecall Consulting should be contacted and we can visit and provide appropriate advice.

Andrew Cleaves
BA (Hons), Dip Arb L6 (ABC), MArborA
Arboricultural Consultant

Appendix A: Qualifications and Experience

Andrew Cleaves
BA (Hons), Dip Arb L6 (ABC), MArborA

Andrew has achieved the Awarding Body Consortium Level 6 Diploma in Arboriculture, which is endorsed by the Royal Forestry Society and is the premier qualification within the arboricultural profession. He also holds the Royal Forestry Society Certificate in Arboriculture, the Arboricultural Association Technician's Certificate in Arboriculture and the LANTRA professional tree inspection certificate. He is a Professional member of the Arboricultural Association.

He has worked in the arboricultural industry for 14 years, beginning at Bournemouth Borough Council where he was part of the development management team providing advice and guidance regarding trees and construction and dealing with all aspects of the management of protected trees.

In 2015 Andrew joined Treecall Consulting as an Arboricultural Consultant, bringing his public sector planning and enforcement expertise to the private sector.

The information presented in this report is based on the information provided and site observations. Conclusions and recommendations are the result of experience within the arboricultural industry.

Arboricultural ASSOCIATION Professional Member

Appendix B: Select Bibliography

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