



**DETAILED TREE  
ASSESSMENT**

Sycamore 30708 at  
Rodway Common

July 2024



**Barton Hyett Associates**  
Arboricultural Consultants



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## SUMMARY

Barton Hyett Associates was instructed to carry out a detailed assessment of sycamore 30708 at Rodway Common, as recommended in the May 2024 inspection. The tree has significant crown dieback, and fungal fruiting bodies were noted at the base of the trunk.

The assessment was carried out using a resistograph drill. The stone path was excavated around the tree, and recordings were made into the base of the trunk at the level of the path.

The readings for the sycamore show complex but advanced decay, with little in the way of sound wood. The readings and crown symptoms are consistent with a type of decay caused by *Kretzschmaria deusta* fungus.

Although the path around the tree has been constructed using a 'cellweb' system (the intention being to avoid compaction and maintain gaseous exchange with the root system), unfortunately, the cells have been filled with standard compacted road stone with dust instead of washed gravel, which will have caused root system stress and dieback.

From the information obtained from the resistograph assessment of sycamore 30708 and the observations made by hand excavation at the base of the tree, I conclude that the risk of harm from whole tree failure is Unacceptable. The tree should be felled. A replacement tree should be considered.

## 1. INSTRUCTION

- 1.1. I am Ian Monger, an arboriculturist with 18 years of experience and a professional member of the Arboricultural Association.
- 1.2. Emersons Green Town Council instructed Barton Hyett Associates Ltd to inspect trees located on land under the Council's ownership/management and carry out risk assessments. The survey was carried out in April 2024, and the results were provided in a separate report in May 2024.
- 1.3. This detailed assessment of sycamore 30708 at Rodway Common was recommended by the earlier inspection because the tree has significant crown dieback, and fungal fruiting bodies were noted at the base of the trunk.

## 2. SYCAMORE 30708

- 2.1. Sycamore 30708 grows within the line of trees at the Rodway Common car park. Its location is shown in Figure 1 and on the online survey map provided to the Council.
- 2.2. The tree was noted as having crown decline in 2020. At the 2024 inspection, it was found to have declined further. A rubbery red/cream fungal body at the base of the trunk was noted but could not be positively identified. Black crusty fungal bodies suggestive of the fungus *Kretzschmaria deusta* were also identified. The tree has significant dieback in the upper two-fifths of its crown. This is not especially surprising, considering a compacted stone path has been installed around the base of the tree, likely having caused significant root system stress and dieback.
- 2.3. While height reduction to remove the upper part of the crown could rectify crown dieback in an otherwise stable tree, unfortunately, the fungal bodies are a significant indicator of decay in the trunk base and root system, with the potential to cause whole tree failure onto the path and parked cars.
- 2.4. Where advanced decay is suspected, straightforward tree removal is often recommended. However, as this tree is within a highly prominent line of trees, I recommended further investigation of the decay using a combination of resistograph micro-drilling and visual inspection of buttress roots to assess and record the extent of decay and provide clear evidence for any decision to remove the tree.
- 2.5. I was recently advised by a South Gloucestershire Council tree officer that the sycamore is not protected by a Tree Preservation Order and is not within a conservation area.



Figure 1: Location of sycamore 30708.

## 3. METHODOLOGY

- 3.1. The assessment was carried out using a resistograph drill (Rinntech). The resistograph records an electronically controlled drill resistance measurement that can be analysed to quantify the amount of sound or decayed wood. The results allow an assessment of the extent of the decayed zone and the thickness of the residual undecayed wood.
- 3.2. The stone path was excavated around the tree, and recordings were made into the base of the trunk at the level of the path and at the cardinal compass points north, east, south, and west. Readings were taken to the full instrument depth of 50 cm.
- 3.3. Research<sup>1</sup> has shown that even early stages of decay by *Kretzschmaria deusta* can be consistently detected by resistograph and can be differentiated from other types of rot (e.g. brown rot) by their signature readings. The irregular rising peaks and troughs of the graphs is caused by early-stage soft rot/facilitative rot of the fungus and increased drill resistance that is markedly different to sound wood and the much more regular troughs associated with white and brown rots.

<sup>1</sup> Humphries, D and Nicoll, A. (2017) Interpreting Tree Decay. Available at: <https://arbtalk.co.uk/articles.html/articles/interpreting-tree-decay-r29/> (Accessed: 5 June 2023)

#### 4. RESISTOGRAPH RESULTS

- 4.1. The resistograph readings obtained are included in **Section 4** of this report. For sound wood, the readings would be expected to show small and uniform/regular peaks reflecting the annual rings.
- 4.2. The readings for the sycamore instead show complex but advanced decay, with little in the way of sound wood. The only obviously sound wood is shown in the eastern reading from 35mm to 110mm depth, where the reading peaks are fairly uniform. Other pockets of sound wood may be shown, but decay is present at varied depths on all four readings.
- 4.3. These uneven variations of wood density reflect complex decay of the type caused by *Kretzschmaria deusta* fungus - a type of 'simultaneous white rot' that can lead to brittle ceramic-like fracture of the root system. The crown dieback symptoms are also consistent with this type of decay.
- 4.4. The path has been built around the tree to some 20-30cm depth, burying the trunk base and probably leading to decay by causing stress to the root system and root death. Although the path has been constructed using a 'cellweb' system (the intention being to avoid compaction and maintain gaseous exchange with the root system), unfortunately, the cells (visible in images 5 and 6 in **Section 3**) have been filled with standard compacted road stone with dust, instead of washed gravel, which has defeated the object of using the cellweb.
- 4.5. The depth of the path meant that it was impossible to locate and assess the tree's roots by hand excavation without significantly disturbing the path surface. However, decay is present around the trunk base below the level of the path and extends above the path level on the southern side of the trunk. The extent of decay suggests that principal roots are likely to be affected. Decay within the root system is particularly unpredictable because it cannot easily be assessed. *Kretzschmaria deusta* fungus is frequently associated with the failure of trees and roots.

#### 5. QTRA RISK ASSESSMENT

- 5.1. With the new picture of decay provided by the inspection, I can provide a QTRA risk assessment for whole-tree failure of the sycamore.
- 5.2. For a pedestrian occupation of Range 2 (8/hour to 72/hour), whole tree failure of the 460cm diameter trunk falls into the Size Range 1 (>450mm). With a probability of failure of Range 3 (1/100 to 1/1000), the Risk of Harm is 1/4000. This is within the **Unacceptable** range of risk according to the 'Tolerability of Risk' framework published by the Health & Safety Executive<sup>2</sup>. Therefore, the tree should be felled.

#### 6. CONCLUSIONS

- 6.1. From the information obtained from the resistograph assessment of sycamore 30708 and the observations made by hand excavation at the base of the tree, I conclude that the risk of harm from whole tree failure is Unacceptable. The tree should be felled.
- 6.2. A replacement tree should be considered. A new tree could be planted in the same location only if the path surface were removed and relaid to a more hospitable specification for tree root growth (once the sycamore stump is removed). However, this is likely to be disruptive and costly. Instead, a replacement tree planted nearby within the nearby grass area would achieve a similar result. Sycamore is a good choice for replanting, particularly because the species will likely be resilient to the predicted changes in our climate. But any large-growing species, such as oak, is suitable.
- 6.3. Passive assessments of the council's trees by the public and maintenance staff will continue and will be a valuable means of identifying sudden changes in tree health and condition before the next formal assessment. I will be happy to advise on any future reports about tree risk.
- 6.4. I have recommended that the next formal inspection at the Council's sites be carried out in four years, with trees identified in the May 2024 report to be re-inspected in two years.



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<sup>2</sup> 'Reducing Risks: Protecting People (2001)

**APRIL 2024 ASSESSMENT**

Tree Ref	Species	Maturity	Height (m)	Stem Diam. (cm)	Amenity value	Condition	Observations	Sig. defects ?	Assessed	Target range	Size range	PoF range	Reduced mass %	RISK OF HARM	Recommendation	Notes	Priority	Reinspection
30708	Sycamore	M	14	50	MEDIUM	Hazard	Compacted stone path around base. Rubbery red/cream fungal body at trunk base SW, with possibly black crusty bodies suggestive of Kretzschmaria deusta fruiting body stages. Significant crown decline in upper two fifths of crown. Height reduction by two fifths would rectify dieback and rebalance crown, but further investigation of decay recommended. Part of avenue, so decision to remove should be well evidenced.	Yes	-	-	-	-	-	-	Detailed inspection	Carry out resistograph assessment of trunk base and hand excavation around base to visually assess roots.	3	Within 1 years

**JUNE 2024 ASSESSMENT**

Tree Ref	Species	Maturity	Height (m)	Stem Diam. (cm)	Amenity value	Condition	Observations	Sig. defects ?	Assessed	Target range	Size range	PoF range	Reduced mass %	RISK OF HARM	Recommendation	Notes	Priority	Reinspection
30708	Sycamore	M	12	46	MEDIUM	Hazard	Occluding historical mechanical wound at 20-35cm height east. Tapering column of cambium dysfunction SE to 1m. Around tree: 20cm depth buried stem. Geotextile then 10cm cell web filled with Road stone, not washed, with 10cm roadstone path surface above. Soil below geotextile, but no root flare found on south side at 30cm depth. Significant decay on southern side. White rot in buried stem to south with pseudosclerotic zones clearly visible and trowel easily to 4cm depth.	Yes	Whole tree failure	2	1	3	-	1/4K	Fell tree	Carry out resistograph assessment of trunk base and hand excavation around base to visually assess roots.	3	0





IMAGE 1: View of sycamore 30708 looking west from the highway.



IMAGE 2: View of sycamore 30708 looking south.



IMAGE 3: Detail of the dieback in the upper crown, looking southwest.



IMAGE 4: Detail of the southern side of the trunk base.



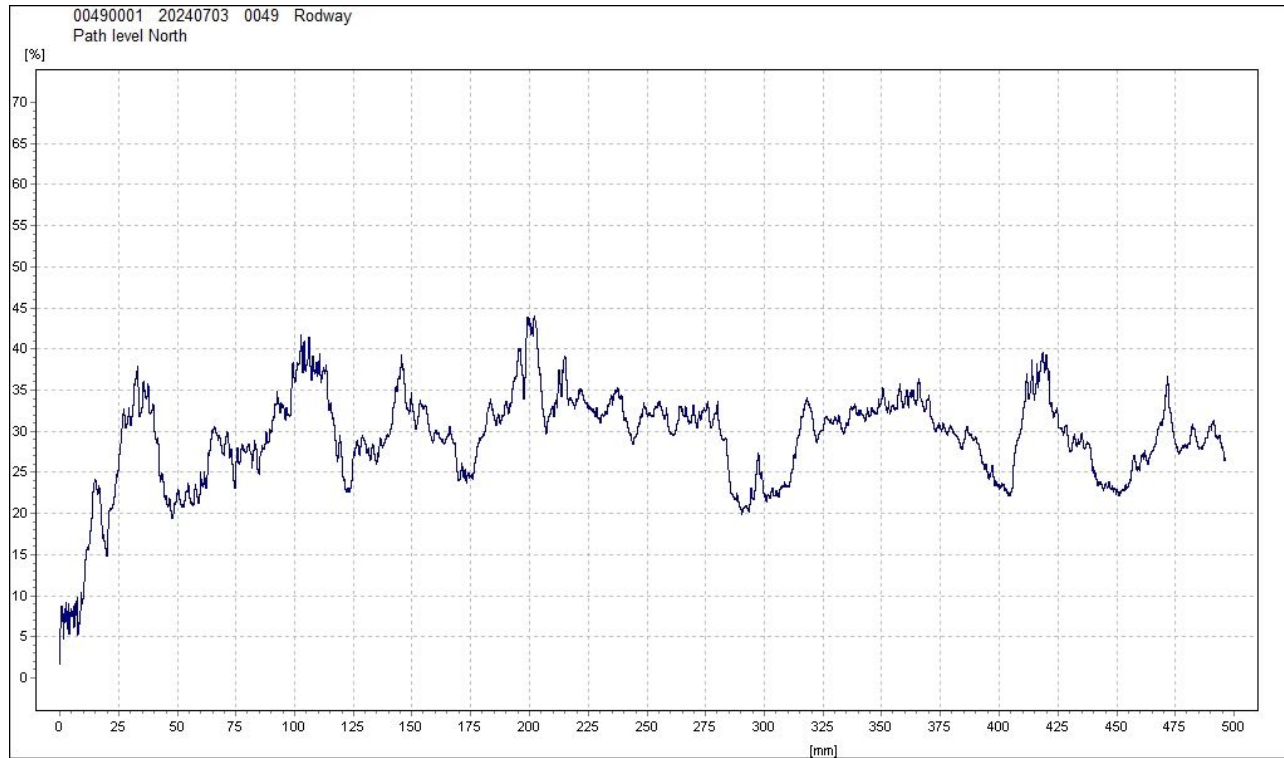
IMAGE 5: The excavated path surface to the south side of the trunk.



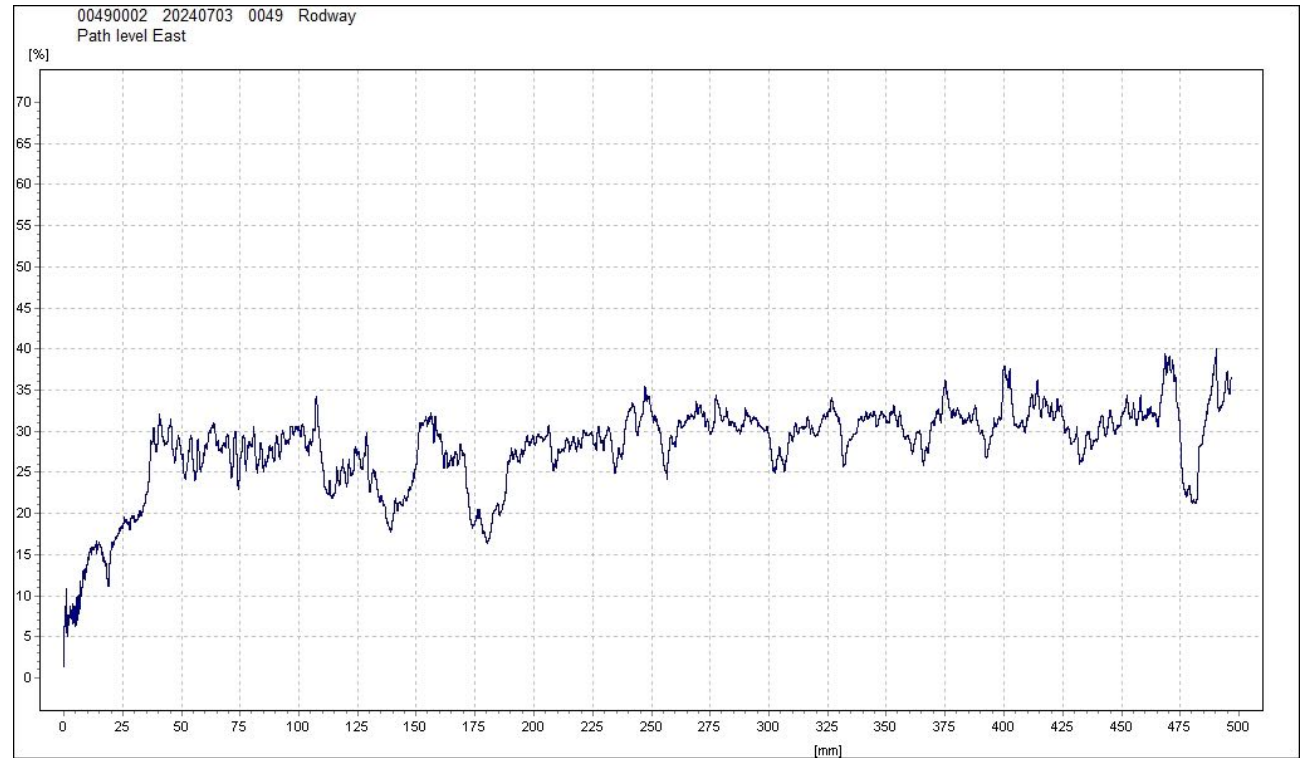
IMAGE 6: The excavated path surface to the south side of the trunk.



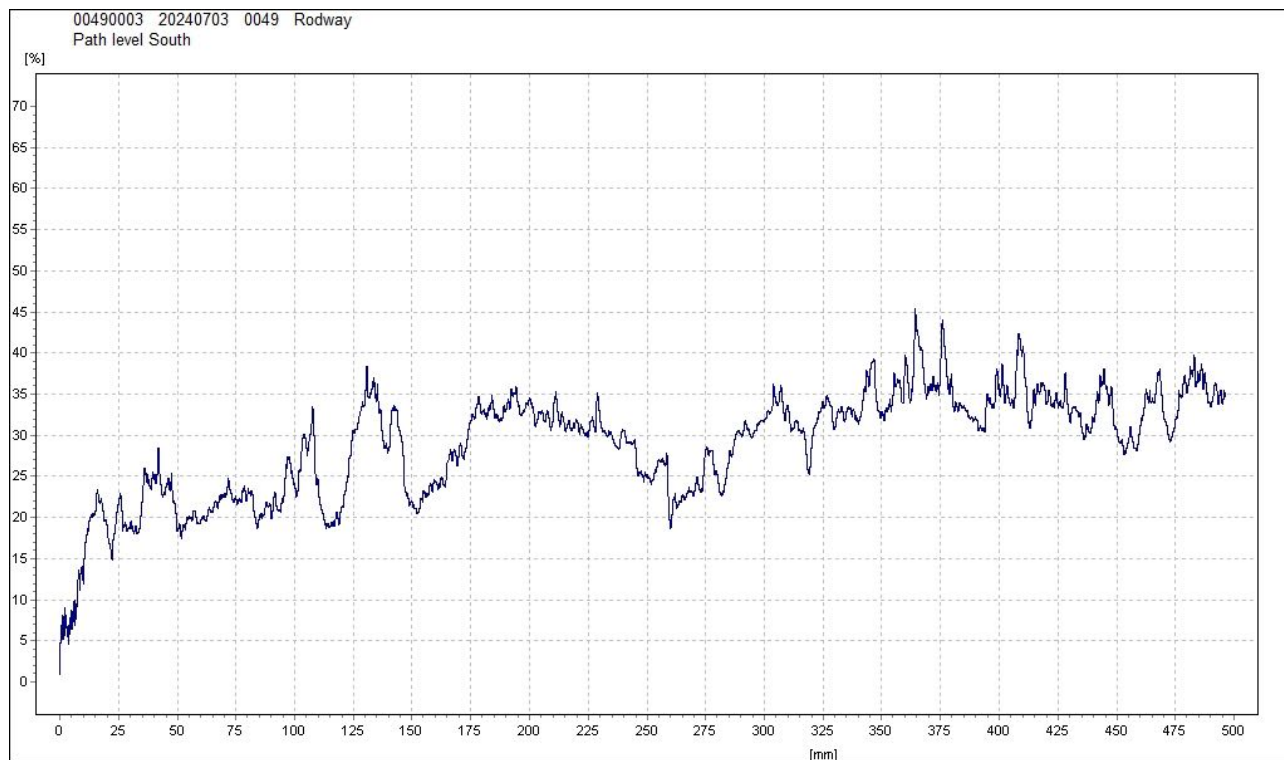
**GROUND LEVEL NORTH**



**GROUND LEVEL EAST**



**GROUND LEVEL SOUTH**



**GROUND LEVEL WEST**

