MDJ ARBORICULTURAL CONSULTANCY LIMITED

Advanced Decay and Risk Assessment Report

Supplemented by the use of sonic tomography and resistance drilling

For 1no. Copper Beech at

Sitcom, Henfield Road, Cowfold, West Sussex, RH13 8DW



DOCUMENT CONTROL

Prepared for: Mr G Case
Local Authority: Horsham District Council
Document Ref: MDJAC-DAS26114-ADRA-01
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Institute of Chartered Foresters No. 782057

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EXECUTIVE SUMMARY

S1. I have been instructed by Mr G Case, the owner of Sitcom, Henfield Road, Cowfold, West Sussex, RH13 8DW, to assess the condition of a mature copper beech on the western boundary of the property, following his concerns about possible decay in the lower trunk.

S2. I visited the site on 22 September 2026 and carried out a visual tree assessment and a Level 3 Advanced Risk Assessment, including sonic tomography and resistance micro-drilling at 3cm above ground level, to establish the extent and distribution of decay within the base of the tree.

S3. The tree is in progressive physiological decline, with a sparse canopy, poor woundwood development and a higher than normal volume of deadwood. Decay is present on the north-west and south-east sides of the base, and prolific fruiting bodies of an unconfirmed crust fungus are present on the eastern stem to approximately 4m above ground level.

S4. The decay assessment shows that the base retains a substantial proportion of sound wood, particularly on the north-eastern side. Even with deliberately exaggerated decay inputs, the indicative safety factor remains well above the desired value of 2, and failure at ground level is therefore not the principal concern.

S5. The principal concern is the failure of stems and principal branches, as a result of the tree's declining condition and suspected decay within the eastern stem. Given the driveway and adjacent highway within falling distance, I assess the tree as posing a high risk over the next three years, as recorded in **Table 1**.

S6. Pruning is unlikely to be effective in a tree in this condition and could hasten its decline. I therefore recommend that the tree is felled and replaced. The tree is protected by a Tree Preservation Order, so consent must be obtained from Horsham District Council before any work is carried out.

1 INTRODUCTION

1.1 INSTRUCTION

1.1.1 I have been instructed by Mr G Case (The Client), the owner of the subject property, Sitcom, Henfield Road, Cowfold, West Sussex, RH13 8DW.

1.2 TERMS OF REFERENCE (TOR)

1.2.1 I am instructed to carry out an internal decay assessment and evaluation of the lower trunk of the subject tree, a copper beech, following concerns raised about its condition by the client. Initial photographs provided to me suggested the potential for decay within the lower trunk, and so a full assessment is necessary to determine the extent and impact of such decay.

1.2.2 This report is intended to identify and quantify the risks associated with the tree, to assist the Client, as the party responsible for management of the tree, in taking reasonable steps to manage foreseeable risks arising from trees under their control, in accordance with their Duty of Care under the Occupiers' Liability Acts.

1.2.3 The agreed scope of work is outlined below:

1. To undertake a site visit and visual inspection of the subject tree, with particular reference to suspected decay, structural defects and relevant site targets;
2. To undertake an advanced decay assessment using sonic tomography and a resistance micro drill, where appropriate, to inform an assessment of internal wood condition;
3. To interpret the diagnostic findings in the context of the tree's structural condition, physiological condition, surrounding targets and foreseeable risk of failure; and
4. To produce this report, setting out the key findings and proportionate management recommendations to assist the Client in meeting their duty of care under the Occupiers' Liability Acts.

1.2.4 This report should be read in conjunction with the documents and plans listed below for context:

Appendix 1. Sonic tomography and resistance drilling methodology and explanatory notes;
Appendix 2. Tree risk assessment methodology and explanatory notes;
Appendix 3. Tree survey schedule;
Appendix 4. Tree survey plan; and
Appendix 5. Full resistance drilling results.

1.3 AUTHOR

1.3.1 I am Matthew Jones, the Managing Director and Principal Arboriculturist of MDJ Arboricultural Consultancy Limited. I have worked exclusively within the arboriculture industry for over 15 years, initially as a climbing arborist. I completed the BSc (Hons) in Arboriculture and Urban Forestry awarded by UCLan in 2022, have been a Professional Member of the Arboricultural Association (MArborA) since 2020, and was awarded Registered Consultant status (RCArborA) in 2025. I am also an Associate Member of the Institute of Chartered Foresters.

1.4 SITE VISIT DETAILS

1.4.1 I visited the site on Tuesday 22 September 2026 and carried out a Visual Tree Assessment (VTA) [1] and a Level 3 Advanced Assessment [2], supplemented by the use of diagnostic tools. Weather conditions were clear, dry and bright and deciduous trees were in full leaf.

1.4.2 The data collected during this visit is presented within the appended tree survey schedule. The tree's location relative to the wider property is shown on the appended tree survey plan, which is based on satellite imagery data, and below.

Figure 1: excerpt of the tree survey plan, showing the location of the tree in relation to the surrounding context.



1.5 SITE AND SOIL DESCRIPTION

1.5.1 The property is a detached residential property, and the tree stands on its western boundary, adjacent to the road junction between Henfield Road and Barleycroft. The driveway to the property is located within 1m of the trunk, and any past works to form or maintain the driveway are likely to have caused some damage and disturbance to the tree's rooting environment.

1.5.2 I have referred to available information [3], which suggests that the underlying soil geology is likely to be Weald Clay Formation.

1.5.3 Clay soils are particularly susceptible to compaction. Compacted soils can restrict a tree's ability to take up water and nutrients, and can lead to a progressive reduction in vitality over time.

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[1] (Mattheck, Bethge, & Weber, 2015)
[2] (Dunster, Smiley, Matheny, & Lilly, 2017)
[3] (British Geological Survey, 2026)

1.6 APPROACH TO TREE RISK ASSESSMENT

1.6.1 The tree was assessed using the International Society of Arboriculture (ISA) Tree Risk Assessment Qualification (TRAQ) methodology, which builds on the Visual Tree Assessment (VTA)[4]. The Level 3 assessment is based broadly on the methodology of the Level 2 'Basic' assessment, outlined below, but is carried out to provide detailed information about specific tree parts or defects, including the use of diagnostic tools where considered necessary.

1.6.2 A Level 2 Basic Assessment is a ground-based, non-invasive inspection of each tree, its growing environment and the surrounding targets, aided by hand tools where necessary. Each tree is evaluated against the likelihood of failure, the likelihood of a failed part impacting a target, and the consequences of such an impact, which combine to produce an overall risk rating of low, moderate, high or extreme.

1.6.3 Trees are dynamic organisms, and the purpose of this assessment is not to identify and remove every defect, but to manage risk to a level that is as low as reasonably practicable while avoiding unnecessary intervention within the wider tree stock. The full ISA TRAQ methodology, including the likelihood, consequence and risk-rating matrices, is available as an appendix to this report.

1.7 LIMITATIONS

1.7.1 This report reflects the tree's condition at a single ground-based inspection on 22 September 2026. Tree condition changes over time, particularly after severe weather.

1.7.2 Decay testing was confined to one cross-section, 3cm above ground level. The eastern stem and the crown were assessed visually from the ground only, and defects at height may not have been visible.

1.7.3 Sonic tomography, resistance drilling and TreeCalc give indicative results only, and their interpretation relies on my professional judgement.

1.7.4 The crust fungus has not been identified, and no samples, root investigation or soil testing were undertaken. Identification of the fungus may alter my assessment of the eastern stem.

1.7.5 This report does not provide structural, legal or ecological advice. Before any works, the contractor should check for bats and nesting birds.

1.7.6 No tree can be guaranteed safe. If the tree is retained pending a decision, it should be re-inspected within 12 months, or sooner following severe weather.

[4] (Mattheck, Bethge, & Weber, 2015)

2 STATUTORY CONTROLS

2.1.1 The subject tree is covered under classification 'T7' of The Henfield Road, Cowfold Tree Preservation Order, which was made in 1980. Consequently, no works can be undertaken until an application to obtain consent to carry out works has been submitted to and approved by Horsham District Council.

2.1.2 The tree is not within a conservation area, and accordingly, there are no arboricultural constraints in this regard.

3 THE TREE

3.1 GENERAL APPEARANCE

3.1.1 The tree is one of a pair of trees, together with a similarly sized tree located in the adjacent property, Cedar Croft. Even from a distance, it is clear that the subject tree is of reduced physiological condition, characterised by a sparse canopy, poor woundwood development around historical pruning wounds, and a higher than normal volume of deadwood.

Photograph 1: showing the differing physiology of the pair of copper beeches in views from Barleycroft.



3.2 THE LOWER TRUNK

3.2.1 The lower trunk exhibits areas of dead, necrotic bark on the north-west and south-east sides of the trunk, which extend to approximately 1.5m where the original nursery graft is located. Sounding the trunk also revealed tonal changes on the north-west and south-east aspects, adjacent to the areas of visible decay.

3.2.2 The south-east area also displayed dark exudates immediately above the root flare. Such exudates are a generic response to underlying stress, with changes and decay of the underlying wood cells leading to increased pressure. Over time, this additional pressure can force sticky exudates through the bark. The presence of such exudates is commonly associated with the root decay fungus Honey Fungus *(Armillaria mellea)* and the soilborne pathogen Phytopthora; although I found no other symptoms of these pathogens.

Photograph 2: below left, showing the necrotic bark and area of tonal changes on the north-west side of the base; and

Photograph 3: below right, showing dark exudates adjacent to the area of tonal changes on the south-east side of the base.





3.3 PRINCIPAL STEMS

3.3.1 The tree becomes twin-stemmed from approximately 3m above ground level. The dominant stem is located to the west, whereas a clearly sub-dominant stem is oriented to the east. The eastern side of the sub-dominant stem bears prolific fungal fruiting bodies.

3.3.2 I have been unable to confirm the species, as its morphology does not match any of the principal wood decay fungi commonly associated with beech. However, it is similar in appearance to *Fomitiporia punctata,* commonly referred to as Elbow Patch Crust of Plane; suggesting its primary host is London plane, rather than beech. Research on the impacts of this fungus is limited, but it is thought to cause a simultaneous white rot of the affected stem, which could lead to hollowing and associated failure[5].

3.3.3 Although the crust fungus most closely resembles *Fomitiporia punctata*, beech is not a recorded host and the identification is unconfirmed. I recommend that a sample be submitted for laboratory identification.

[5] (Forest Research, 2026)

Should this confirm F. punctata or another regulated organism, the finding should be reported to the plant health authorities via TreeAlert (https://treealert.forestresearch.gov.uk/reports/general).

Photograph 4 and Photograph 5: showing the fungal fruiting bodies of an unknown crust fungus on the eastern stem, extending to 4m above ground level.



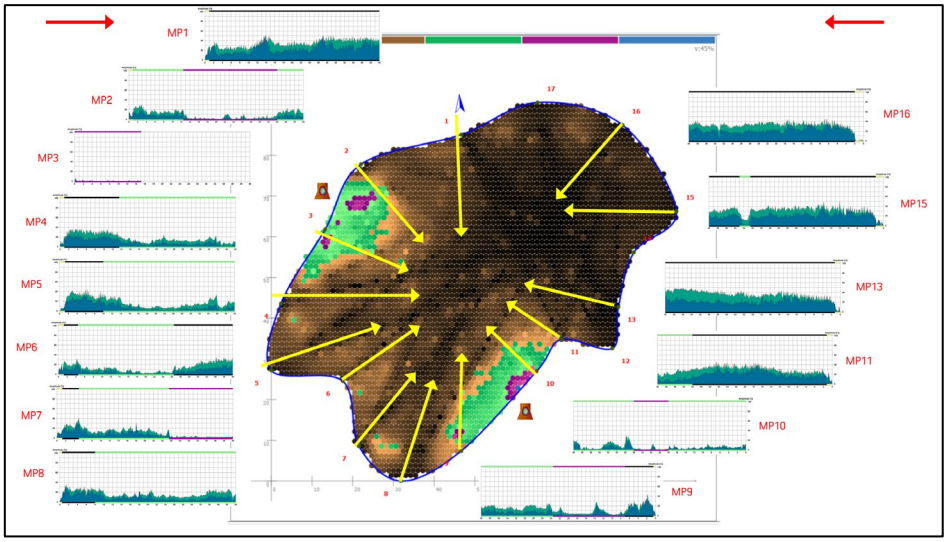

3.4 Canopy Observations

3.4.1 As noted above, the canopy is notably sparse, with poor woundwood development throughout. The tree appears to be in progressive physiological decline, which is likely to have been compounded by the drought conditions of the last two summers. Beech is particularly intolerant of drought because of its shallow rooting habit.

3.5 Decay Assessment Results

3.5.1 To quantify the extent of decay close to ground level, I carried out a decay assessment at 3cm above ground level using both sonic tomography and a resistance microdrill. The results are provided below.

Figure 2: showing the sonic tomography assessment, overlaid with resistance microdrill traces.



3.6 INTERPRETATION OF RESULTS

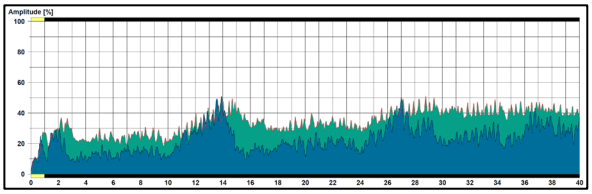
3.6.1 The results suggest that two areas of decay exist on the north-west and south-east sides, broadly in the locations expected based on visual observation. However, the north-eastern side of the trunk retains considerably more sound, largely unaffected wood than the south-western half of the tree's base.

3.6.2 The drilling assessments, which were taken in the same locations as the measuring points (MPs) indicate that the decay is more extensive than the tomography suggests. The full drilling results are provided in **Appendix 5**. However, a number of pertinent results are provided below for further explanation. Results are read in the direction of the red arrows, and colour-coded bars at the top and bottom provide a quick reference to:

- Yellow – Bark and outer sapwood;
- Black – Normal density wood;
- Green – Degraded wood/Incipient decay; and
- Magenta – Extensively decayed wood, cavities or hollow.

Figure 3: below left, showing an excerpt of the results of Measurement 1 on the north side of the trunk; and

Figure 4: below right, showing an excerpt of the results of Measurement 3 on the west side of the trunk.



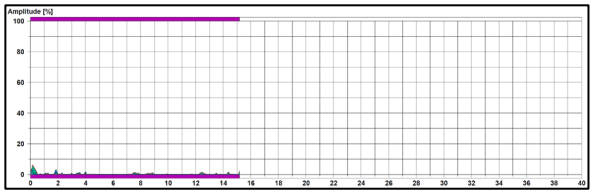
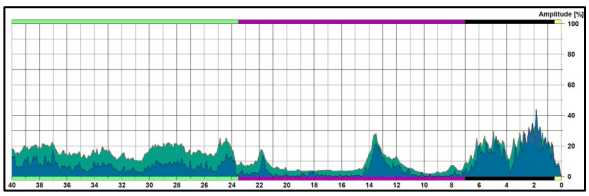
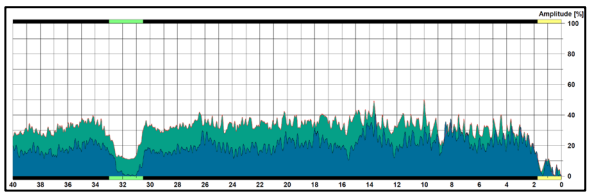


Figure 5: below left, showing an excerpt of the results of Measurement 9 on the south side of the trunk; and

Figure 6: below right, showing an excerpt of the results of Measurement 15 on the east side of the trunk.





3.6.3 These individual traces show the variation in wood density between the north-east and south-west sections, particularly in relation to the western side (MP3), where resistance was so low that the drill bit retracted automatically at c. 15cm to prevent damage.

3.7 DISCUSSION OF RESULTS

3.7.1 When assessing tree risk, the presence of decay, cavities or hollowing is not, in itself, necessarily a cause for concern. Hollowing is a common and natural feature of the later stages of a tree's life, as evidenced by the many veteran trees found across the UK. Rather, the principal consideration is whether a reasonable

degree of sound, living wood remains around the outer circumference of the trunk. It is this outer wood that provides much of the tree's structural rigidity and its resistance to the forces acting on the crown[6].

3.7.2 I have used third-party software (TreeCalc)[7] to generate an indicative safety factor for the trunk at 3cm above ground level, based on the tomography findings. In arboricultural terms, a safety factor is a numerical expression of the structural strength a tree, or part of a tree, retains in reserve beyond the loads it can reasonably be expected to experience under normal conditions, principally wind loading. A higher value indicates a greater margin of stability; a lower value indicates a reduced margin and may warrant management intervention. The software applies a generalised model with a limited range of inputs and its outputs are correspondingly generalised rather than site or tree-specific. They should not be relied upon in the absence of interpretation by a competent arboriculturist, and are presented here as one line of evidence among several.

3.7.3 TreeCalc suggests that a safety factor of 1.5 is broadly acceptable. However, given the identified targets, I have used a desired safety factor of 2 for the purposes of this assessment.

3.7.4 Assuming no defects, and based on the tree's estimated proportions, TreeCalc suggests that the tree would have a Basic Safety Factor (BSF) of approximately 17: a high BSF that would suggest a low likelihood of failure at the point of the tomography.

3.7.5 When the decay assessment results are factored in, the safety factor reduces. The tree displays evidence of decay on the outer edges, but the outer periphery of the trunk is largely intact. Therefore, I have purposely used a decay input that is considerably more extensive than the real-life context, to illustrate the impact on the safety factor. Even with the over-emphasised decay parameters (25% circumferential opening, and a 60% central cavity), and peak wind speeds of 117kph (c. 70mph), the software suggests that the tree retains a safety factor of c. 6.8. On this assessment alone, therefore, Treecalc suggests that there is no need for remedial pruning.

[6] (Kane, Ryan, & Blonairz, 2001)
[7] (ArboSafe GmbH, 2026)

Figure 7: showing the Treecalc software output, suggesting a basic safety factor of c. 17.

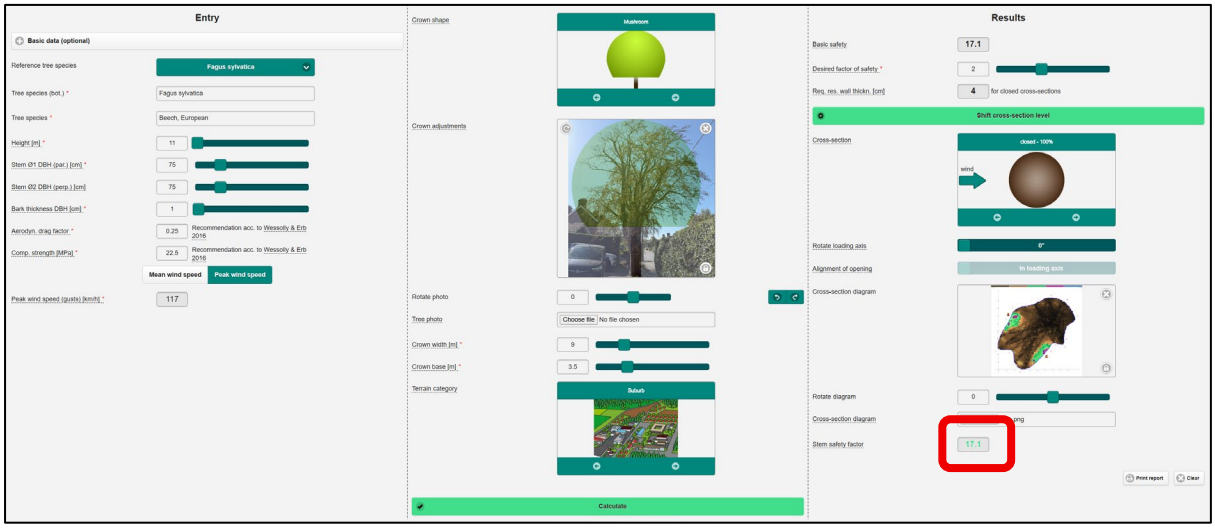
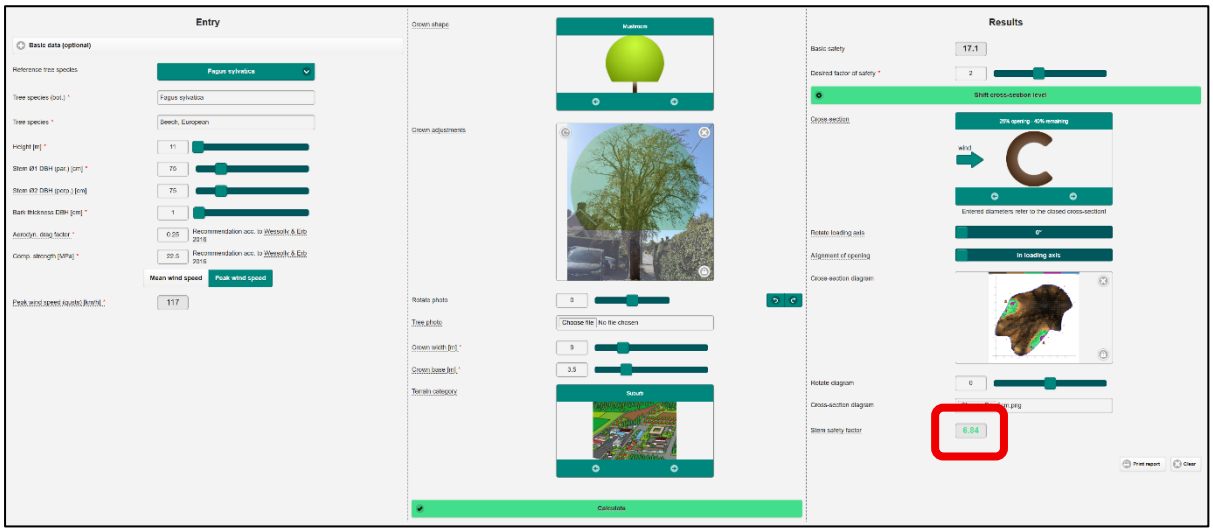


Figure 8: showing the Treecalc software output, with over emphasised decay inputs, suggesting a residual safety factor of c. 6.8.



3.8 RISK ASSESSMENT

3.8.1 Based on my observations and the findings of the resistance micro-drilling assessment, I consider the principal risk feature to be the failure of individual principal branches and stems as a result of their poor physiological condition, and the progression of suspected aerial stem decay; rather than failure at ground level. However, the failure of the tree at or close to ground level as a result of the identified decay has also been included in the assessment of risk presented below.

3.8.2 Of primary concern, is the eastern stem, which if it failed, would be highly likely to impact the driveway where cars would likely be parked, or where users or visitors to the property could reasonably be accessing the front door. The occupancy rate on the east side of the tree is significantly lower than the west side, which includes a busy road and footpath. However, when branches or stems fail, they can land on their tip ends, which can sometimes thrust the butt end in the opposite direction; in this case, that direction would likely be the west

side of the tree, where the likelihood of impact would be higher. On balance, therefore, I consider the likelihood of impact to be high.

Table 1: risk assessment by failure type.

Failure Type	Likelihood	Impact	Combined	Consequences	Total Risk
Sub-dominant branch failures	Probable	Medium	Somewhat Likely	Significant	**Moderate**
Stem/principal branch failures	Probable	High	Likely	Severe	**High**
Lower trunk/root plate failures	Possible	High	Somewhat Likely	Severe	**Moderate**

3.8.3 Using the methods set out at **Appendix 2**, I consider the tree to pose a high risk over the course of the next three years. The principal targets assessed are the private use of the driveway, and the users of the adjacent highway, including pedestrians.

3.9 MANAGEMENT OPTIONS

3.9.1 I have considered remedial pruning as a means of reducing the likelihood of failure. While crown reduction would reduce wind loading, I do not consider it appropriate in this instance. The tree appears to be in a state of progressive physiological decline, and I would expect pruning to be counterproductive for the following reasons:

- **Loss of photosynthetic capacity:** pruning would remove a significant proportion of the remaining live foliage. This would further limit the tree's ability to produce energy and is likely to result in a weak response to pruning.
- **Depletion of energy reserves:** the tree would be expected to draw on its already limited stored reserves to replace the lost foliage. This would leave fewer resources for defence against the spread of decay.
- **Creation of new wounds:** pruning cuts would create new points of entry for decay organisms in a tree whose capacity to compartmentalise decay is already reduced.

3.9.2 With this in mind, I consider removal of the tree to be the most prudent course of action. Removal would eliminate the risk posed by the tree. I recognise that it would also result in a short-term loss of amenity. However, in my opinion, this is outweighed by the likelihood of failure and the absence of a viable remedial alternative. Removal would also allow for suitable replacement planting, which I would recommend be secured by condition. In time, a replacement tree would have the potential to make a significant contribution to public amenity and to the established tree cover along Henfield Road.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

4.1.1 The copper beech appears to be in progressive physiological decline, evident in its sparse canopy, poor woundwood development, higher than normal volume of deadwood and necrotic bark at the base. The drought

conditions of recent summers are likely to have contributed to its condition, and the prospects of a full recovery are seemingly low.

4.1.2 Sonic tomography and resistance drilling confirm decay on the north-west and south-east sides of the base, with the most advanced decay on the western side (MP3). The north-eastern half of the base remains largely sound. Even when decay inputs exceeding the observed extent are applied to third party software, the indicative safety factor (c. 6.8) remains well above the desired value of 2. Failure at or close to ground level is therefore possible, but it is not the principal concern at present.

4.1.3 The principal concern is the failure of stems and principal branches. The eastern, sub-dominant stem bears prolific fruiting bodies of an unidentified crust fungus, which may be causing a white rot capable of hollowing the stem, and the tree's declining condition increases the likelihood of branch failure throughout the crown.

4.1.4 The driveway lies within 1m of the trunk, and users of the adjacent highway, including pedestrians, are within falling distance. The consequences of a stem or principal branch striking a person or vehicle would be severe. On this basis, I assess the tree as posing a high risk over the next three years, in line with the TRAQ methodology provided at **Appendix 2**.

4.1.5 I do not consider pruning to be a viable remedial option. Removing live foliage from a declining tree would further deplete its energy reserves and create new entry points for decay, without addressing the underlying decline. Felling is therefore the only practicable means of reducing the risk to an acceptable level, and replacement planting would restore the tree cover along Henfield Road in the longer term.

4.1.6 The tree is protected by a Tree Preservation Order, and consent must be obtained from Horsham District Council before it is felled. Given the high risk rating, I recommend that an application is submitted without delay, supported by this report.

4.2 RECOMMENDATIONS

1)	Section fell the tree to ground level. Stump grinding may be carried out at the client's discretion, but the stump is unlikely to re-shoot following removal.

Matthew Jones

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APPENDIX 1:
DECAY ASSESSMENT METHODOLOGY AND EXPLANATORY NOTES



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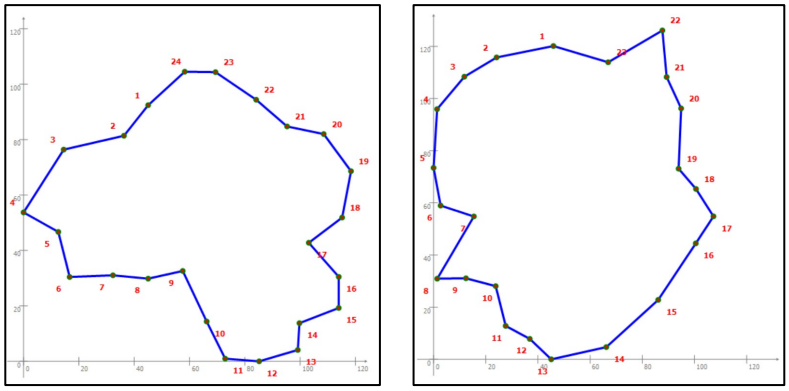
SONIC TOMOGRAPHY METHODOLOGY

The PiCUS® Sonic Tomograph unit can detect decay and cavities in standing trees non-invasively by tracking the speed of sound waves in the trunk, roots, and larger branches. The velocity of sound in wood depends on the modulus of elasticity (MOE) and the density of the wood itself. Damage and disease in trees can cause fractures, cavities, or rot, which reduces elasticity and density of the wood. Wood characteristics can vary, both between species and within a tree species itself. Such damage can be found by comparing individual sound velocities measured on a specific tree with tabulated standard values. The PiCUS® Sonic Tomograph uses relative sound velocities so that the system calibrates itself automatically at each measured cross-section[1].

The PiCUS® Sonic Tomograph consists of a set of 12 sensors, which are placed at strategic points on a tree trunk, known as measuring points (MPs). The MPs are used to determine tree geometry accurately using the digital callipers; examples are shown below.

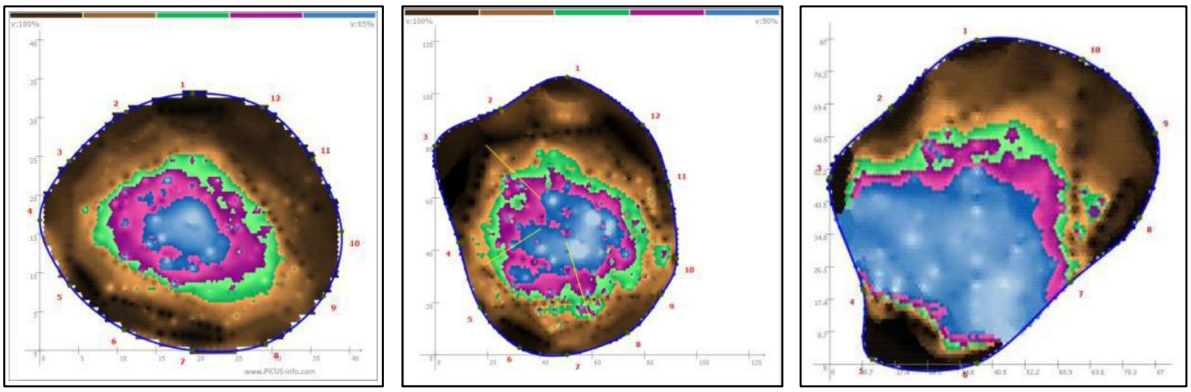
Figure 1: showing examples of tree geometry using the PiCUS® 3 callipers.



Each sensor is connected to a nail. By manually tapping the sensors with a small hammer, sound waves are induced and their delays recorded. The time the sound wave travels between the sensors is used to calculate the apparent sound velocities.

As each sensor on the tree records delays (times) of every impact at each point, a dense network of sound velocities is collected across all cross-sections. A full-coloured tomogram of the tree's cross-section can be made on site using a PC. This tomogram shows the apparent presence of decay and cavities within the tree. It can also indicate the remaining wall thickness or opening angles of cavities.

Figure 2: example tomograms showing decay in trees[2].



Colour key

- High velocities – **black** or **brown**
- Low velocities – **blue** or **violet**
- Undetermined velocities – **green**

[1] (IML, 2017)
[2] (IML, 2017)

Limitations

Whilst undoubtedly useful, there are a number of known limitations when using tomography, which include[3]:

1) **Material Property Assumptions:** Sonic tomography infers internal conditions by measuring sound-wave velocity through wood. The method assumes a relatively consistent relationship between wave speed and material stiffness; however, wood is heterogeneous. Variations in grain orientation, growth stresses, reaction wood, moisture content, and species-specific wood anatomy can all influence wave propagation independently of decay, potentially leading to false positives or over-estimation of defect extent**.**
2) **Limited Ability to Differentiate Defect Type:** Tomograms indicate relative differences in stiffness, not defect causation. As such, sonic tomography cannot reliably distinguish between, incipient decay, historical decay, cavities, cracks or radial splits and zones of altered but mechanically functional wood. Accordingly, areas displayed as "low velocity" should not automatically be interpreted as structurally unsound without corroborating evidence.
3) **Sensitivity to Sensor Placement and Geometry:** Results are highly dependent on the number and spacing of sensors, their accurate radial alignment, and the correct measurement of stem geometry. Irregular stems can distort reconstruction algorithms, leading to exaggerated decay zones. Measurements taken above the buttress flare may not be representative of critical basal load-bearing wood.
4) **Two-Dimensional Representation of a Three-Dimensional Structure:** Sonic tomography produces a single cross-sectional slice, which may not reflect the vertical continuity, taper, or compartmentalisation of defects. Localised decay pockets may appear severe in isolation but be structurally insignificant when considered in three dimensions, while vertically extensive defects may be underestimated if sampling height is poorly chosen.

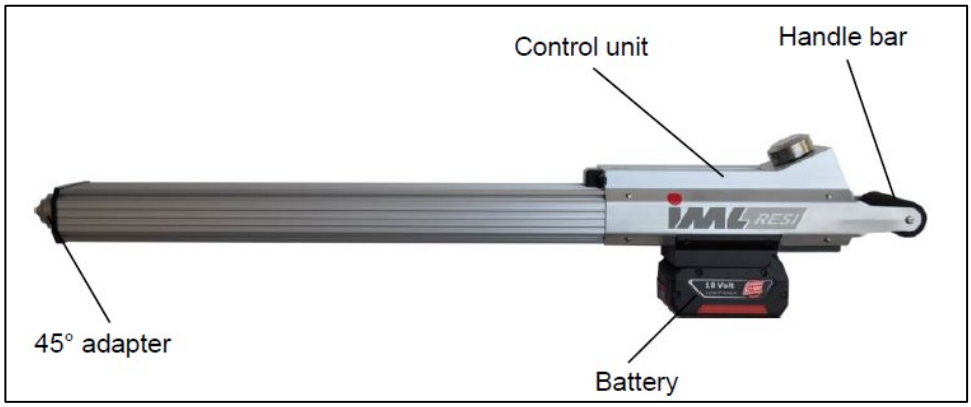
Accordingly, the use of sonic tomography in isolation cannot be taken as irrefutable evidence, since the tomogram depicts the difference in sound wave velocities across a single cross-section, and this does not always indicate the true extent of decay.

RESISTANCE MICRO DRILLING METHODOLOGY

The resistance drill comprises a 400mm drilling 'bit' which is attached to an electronic unit that records, amongst other parameters, needle speed and needle resistance. The electronic unit produces a graphical representation of the data, which is read from right to left; with the drilling depth (cm) noted along the X axis, and the amplitude (%) along the Y axis.

Two traces are shown on the resulting graphs. On coloured readouts, the green depicts the torque required to maintain a constant speed in revolutions per minute. The blue is the feed motor which measures the torque and resistance of the outward movement of the drill bit towards the centre of the tree, in order to maintain a constant speed. Providing two separate readings offers an improvement in accuracy over previous iterations of the resistance drill, which was prone to suffering from drag resistance, whereby the friction on the drill could be increased proportionately when deep within the wood, leading to inaccurate readings.

Figure 3: showing the IML PD400 drill[4].



REFERENCES

Instrumenta Mechanik Labor System GmbH. (2019). *IML-RESI PD-Series Manual.* Wiesloch, Germany.

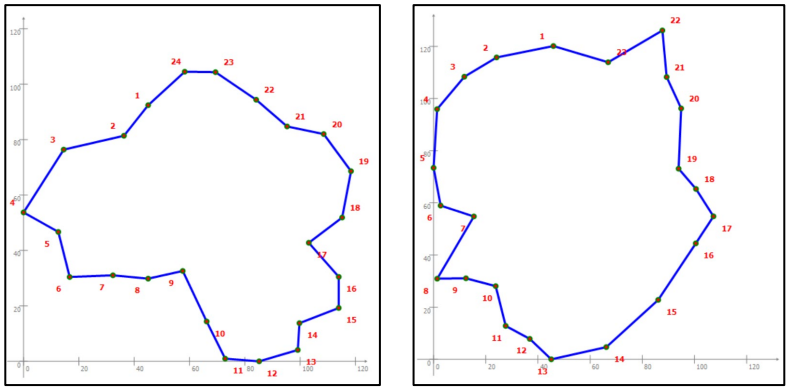
[4] (Instrumenta Mechanik Labor System GmbH, 2019)

SONIC TOMOGRAPHY METHODOLOGY

The PiCUS® Sonic Tomograph unit can detect decay and cavities in standing trees non-invasively by tracking the speed of sound waves in the trunk, roots, and larger branches. The velocity of sound in wood depends on the modulus of elasticity (MOE) and the density of the wood itself. Damage and disease in trees can cause fractures, cavities, or rot, which reduces elasticity and density of the wood. Wood characteristics can vary, both between species and within a tree species itself. Such damage can be found by comparing individual sound velocities measured on a specific tree with tabulated standard values. The PiCUS® Sonic Tomograph uses relative sound velocities so that the system calibrates itself automatically at each measured cross-section[1].

The PiCUS® Sonic Tomograph consists of a set of 12 sensors, which are placed at strategic points on a tree trunk, known as measuring points (MPs). The MPs are used to determine tree geometry accurately using the digital callipers; examples are shown below.

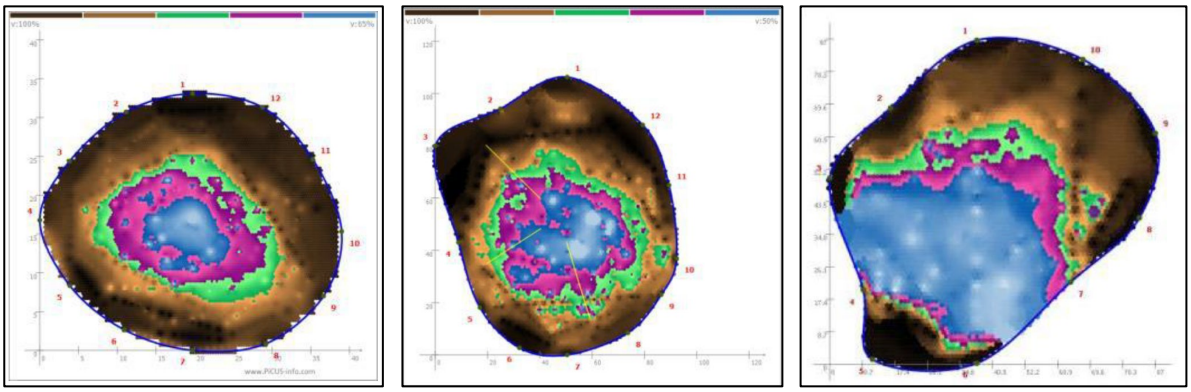
Figure 1: showing examples of tree geometry using the PiCUS® 3 callipers.



Each sensor is connected to a nail. By manually tapping the sensors with a small hammer, sound waves are induced and their delays recorded. The time the sound wave travels between the sensors is used to calculate the apparent sound velocities.

As each sensor on the tree records delays (times) of every impact at each point, a dense network of sound velocities is collected across all cross-sections. A full-coloured tomogram of the tree's cross-section can be made on site using a PC. This tomogram shows the apparent presence of decay and cavities within the tree. It can also indicate the remaining wall thickness or opening angles of cavities.

Figure 2: example tomograms showing decay in trees[2].



Colour key

- High velocities – **black** or **brown**
- Low velocities – **blue** or **violet**
- Undetermined velocities – **green**

[1] (IML, 2017)
[2] (IML, 2017)

Limitations

Whilst undoubtedly useful, there are a number of known limitations when using tomography, which include[3]:

1) **Material Property Assumptions:** Sonic tomography infers internal conditions by measuring sound-wave velocity through wood. The method assumes a relatively consistent relationship between wave speed and material stiffness; however, wood is heterogeneous. Variations in grain orientation, growth stresses, reaction wood, moisture content, and species-specific wood anatomy can all influence wave propagation independently of decay, potentially leading to false positives or over-estimation of defect extent**.**
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Accordingly, the use of sonic tomography in isolation cannot be taken as irrefutable evidence, since the tomogram depicts the difference in sound wave velocities across a single cross-section, and this does not always indicate the true extent of decay.

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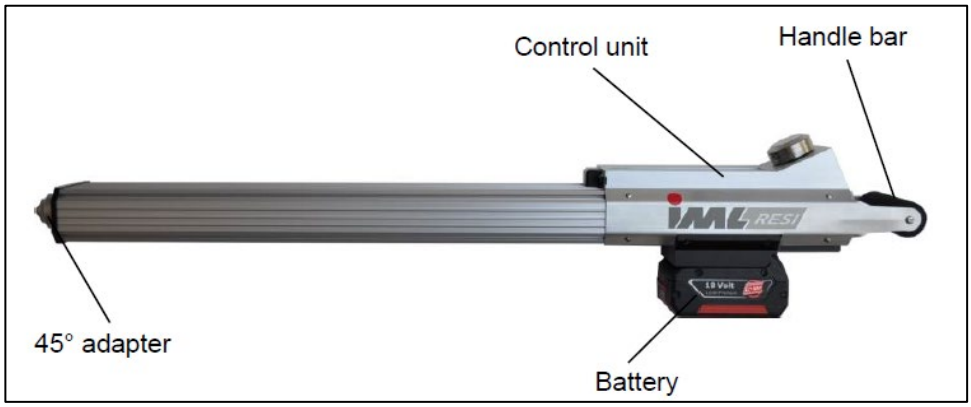

REFERENCES

Instrumenta Mechanik Labor System GmbH. (2019). *IML-RESI PD-Series Manual.* Wiesloch, Germany.

[4] (Instrumenta Mechanik Labor System GmbH, 2019)

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APPENDIX 2:
RISK ASSESSMENT METHODOLOGY (Level 2 – TRAQ)



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UNDERSTANDING TREE RISK

Trees are dynamic organisms that are the subject of continual change and adaptation to their given environments. As such, they are complex organisms that are able to successfully adapt to structural defects, if given the time to do so[1].

Statistics on tree-related injuries suggest that the risk of being killed by a falling tree, either in whole or in part, is around 1:15,000,000 [one in fifteen million][2]. Approximately 55 A&E cases per year relate to injuries resulting from being struck by trees, and this is exceedingly small when compared to A&E cases for other, commonly accepted risks, including 2.9 million leisure-related cases; footballs (262,000), children's swings (10,900) and even wheelie bins (2,200) are involved in significantly more incidents on an annual basis[3].

Accordingly, it is imperative to maintain this perspective when assessing the risk posed by trees, in order to avoid unnecessary tree removals or pruning, and thus, diminishing the wider ecosystem services that they provide society.

SURVEY METHODOLOGY

General

The survey was conducted using the International Society of Arboriculture (ISA) Tree Risk Assessment Qualification (TRAQ) methodology. This process builds on the Visual Tree Assessment (VTA), which provides a biomechanics-based approach for inspecting trees and has become the standard methodology for arboriculturists. The ISA methodology provides three levels of survey, and these are intended to provide a cost-effective solution for all sizes of tree stock, as outlined below.

- **Level 1 – Limited visual inspection:** seeks to highlight trees with notable or obvious defects, usually within large populations of trees, by completing a walk or drive-by survey, and highlighting trees for further assessment where necessary;
- **Level 2 – Basic assessment**: includes a detailed assessment of trees, aided by hand tools where necessary, their growing environments and the targets surrounding the trees; or
- **Level 3 – Advanced assessment:** usually prescribed following a Level 2 assessment, this level seeks to provide additional, detailed information about specific tree parts, defects, targets, or site conditions. Specialised equipment such as microdrills or sonic tomography may be used to identify internal decay or defects.

Scope of survey

A Level 2 'Basic Assessment' survey was undertaken. This level of survey methodology comprises a ground-based, non-invasive assessment of each individual tree which seeks to[4]:

- Where applicable, determine the significant targets and target zone for the tree or branches of concern;
- Review the site history, conditions, and species failure profile;
- Inspect the tree visually, and where deemed necessary, use hand tools including but not limited to binoculars, a nylon-headed mallet, probes, or shovels to determine structural condition;
- Assess expected loads on the tree and its constituent parts;
- Assess general tree health;
- Record observations of site conditions, defects and outward signs of potential internal defects and response growth;
- If necessary, recommend advanced assessment;

[1] (National Tree Safety Group, 2024)
[2] (National Tree Safety Group, 2024)
[3] (National Tree Safety Group, 2024)
[4] (Dunster, Smiley, Matheny, & Lilly, 2017)

• Analyse the collected data to determine the likelihood and consequences of failure in order to evaluate the degree of risk;
• Develop mitigation options and estimate residual risk for each option; and
• Develop and submit the findings to The Client/tree manager and advise on reinspection intervals.

Target assessment

In the context of tree risk assessment, a target is any person, structure or property that may be damaged in the event of a failure.

The target zone is the area immediately surrounding the tree, and therefore, objects within this area are targets by default. Targets may therefore include but not be limited to, pedestrians using footpaths or bridgeways, street furniture such as lamp columns and road signs, cars parked in laybys, or those being driven on roads adjacent to trees.

In all risk assessments, humans are the principal target. Therefore, occupancy rates of people in the tree target zones are a material consideration when undertaking tree risk assessments. Protection factors, such as the presence of other trees or buildings, may offer an element of protection for people within the tree target zone; these are also considered as part of the ISA TRAQ methodology.

Targets may fall into one of three categories:

• **Static targets:** targets that are fixed or not easily moved, such as houses, sheds, and street furniture;
• **Movable targets:** targets that can be re-located with relative ease, such as sculptures, parked cars, or playground equipment; or
• **Mobile targets:** those that are in motion or move intermittently, such as pedestrians, bicycles, or cars.

Data analysis and risk categorisation

The ISA TRAQ methodology requires assessments to be made in regard to three key aspects of tree risk: the likelihood of failure occurring, the likelihood of the tree part impacting a target if a failure occurred (irrespective of the likelihood of failure), and the consequences of such a failure occurring. Additional information on these assessments is provided below for transparency.

Likelihood of failure

Where one or more structural defects exist, the likelihood of failure is assessed based on the species profile of the individual tree, in consideration with the severity of the defects observed. The likelihood of failure is assessed in accordance with **Table 1** below.

Table 1: explanatory notes on the likelihood of failure[5].

Likelihood of failure	Description
Improbable	The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions within the specified timeframe
Possible	Failure could occur, but it is unlikely during normal weather conditions within the specified timeframe
Probable	Failure may be expected under normal weather conditions within the specified timeframe
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is an infrequent occurrence for a risk assessor to encounter and may require immediate action to protect people from harm

Likelihood of impacting a target

Once targets have been identified it is important to determine occupancy rates and any protection measures that may protect the target in the event of a failure. Occupancy rates can be summarised as:

[5] (Dunster, Smiley, Matheny, & Lilly, 2017)

- **Rare occupancy:** the target zone is not commonly used by people;
- **Occasional occupancy:** the target zone is occupied by people or targets infrequently or irregularly;
- **Frequent occupancy:** the target zone is occupied for a substantial proportion of a day or work week; or
- **Constant occupancy:** a target is present at nearly all times, 24 hours a day, 7 days a week.

Following determination of occupancy rates and protection factors, the likelihood of the tree or tree part is categorised in accordance with **Table 2** below.

Table 2: explanatory notes on the likelihood of a tree (or part) impacting a target.

Likelihood of impact	Description
Very low	The likelihood of the failed tree or part impacting the specified target is remote
Low	It is not likely that the failed tree or part will impact the target
Medium	The failed tree or part is as likely to impact the target as not
High	The failed tree or part will most likely impact the target

Once the likelihood of failure and impacting the target have been calculated, a combined likelihood of both factors is provided by using Matrix 1 of the system, reproduced below.

Table 3: likelihood of failure matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	**Low**	**Medium**	**High**
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Consequences of failure

Once the likelihood of failure and a failure impacting a specified target have been categorised, the consequences of a failure occurring must be considered. Consequences are categorised into one of the following four categories, based on the value of the target and the harm that may arise.

Table 4: explanatory notes on the consequences of failure.

Consequence	Description	Examples
Negligible	Consequences are those that involve low-value property damage or disruption that can be replaced or repaired	A small branch striking a fence A medium-sized branch striking a shrub bed A large part striking a structure and causing low monetary damage Disruption of power to landscape lighting
Minor	Consequences are those that involve low to moderate property damage, small disruption to traffic or a communication utility, or very minor injury	A small branch striking a house roof from a high height A medium-sized branch striking a deck from moderate height A large part striking a structure and causing moderate monetary damage Short-term disruption of power to a house Temporary disruption of traffic to a residential street
Significant	Consequences are those that involve property damage of moderate to high-value, considerable disruption, or personal injury	A medium-sized part striking an unoccupied new vehicle from a moderate or high height A large part striking a structure and resulting in high monetary damage Disruption of distribution to primary or secondary utility services Disruption to traffic on a 'B road'
Severe	Consequences are those that could involve serious personal injury or death, damage to high-value property, or disruption of important activities	Injury to a person that may result in hospitalisation A medium-sized part striking an occupied vehicle A large part striking an occupied house Serious disruption of high-voltage utilities Disruption to traffic on 'A roads' or motorways

Risk ratings

Finally, the ISA TRAQ methodology produces an overall risk rating based on the inputs outlined above using Matrix 2 of the methodology outlined below.

Table 5: risk rating matrix. Reproduced (Dunster, Smiley, Matheny, & Lilly, Tree risk assessment manual, 2017).

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	**Minor**	**Significant**	**Severe**
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Low risk: the low-risk category applies when consequences are negligible, when likelihood is unlikely, or when the consequences are minor, and the likelihood is somewhat likely. Mitigation or maintenance may be appropriate for some trees but the priority for action is generally low.

Moderate risk: moderate-risk situations are those for which consequences are minor, and the likelihood is very likely or likely, or the likelihood is somewhat likely, and the consequences are significant or severe. The assessor may recommend mitigation or monitoring in such instances. The decision for mitigation and timing of works is dependent on the risk tolerance of the tree owner or manager.

High risk: high-risk situations are those for which consequences are significant, and the likelihood is very likely or likely, or the consequences are severe, and the likelihood is likely. This level of risk indicates that the risk assessor should recommend mitigation measures. The decision for mitigation and timing of works is dependent on the risk tolerance of the tree owner or manager.

Extreme risk: the extreme-risk category applies in situations in which failure is imminent with a high likelihood of impacting the target, and the consequences are severe. The tree risk assessor should recommend mitigation measures to be undertaken as soon as is practicable. In some cases, this may require exclusion zones be set up in order to minimise access to the tree to avoid injury.

Timescales

In order to provide clarity and a sense of urgency, I have developed a series of standardised timescales to assist in the prioritisation of recommended works. These are provided in addition to the tree risk rating above and are set out below:

- **Priority 1 (P1)** – Action recommended work as soon as practicable;
- **Priority 2 (P2)** – Action recommended works within 6 months of survey;
- **Priority 3 (P3)** – Action recommended works within 2 years of survey;
- **Priority 4 (P4)** – Action recommended works during the next available round of routine tree works, as budget allows, or prior to the next inspection; and
- **Priority 5 (P5)** – No works are considered necessary.

REFERENCES

Dunster, J. A., Smiley, E. T., Matheny, N., & Lilly, S. (2017). *Tree risk assessment manual* (2 ed.). Atlanta, USA: International Society of Arboriculture.

National Tree Safety Group. (2024). *Common sense risk management of trees.* Forest Research and The Arboricultural Association.

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APPENDIX 3:
TREE SURVEY SCHEDULE



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Client name: Mr G Case
Site: Sitcom, Henfield Road, Cowfold, RH13 8DW
Reference: MDJAC-DAS26114-TSS-01
Survey date: 22 September 2026

Tree Survey Schedule

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Arboricultural								Risk			Recommendations	
Tree No.	Species	Height [m]	Trunk Dia. [mm]	Crown Spread [m]	Life Stage	Physiology	Structural Condition	Target(s)	Comments	Risk Rating	Recommended Work	Timescales
T1	Copper beech	11	755 @ 1.5m	N: 5.5 E: 3.5 S: 2 W: 3.5	Mature	Low	Poor	#Parked vehicles #Pedestrians #Residential property #Road users	Bark necrosis around root flare. Incipient decay evident on N and SE side by visual inspection, confirmed via sounding mallet. Exudates between buttress roots on N side. Necrosis extends to original graft at 1.25m. Fungus on SE stem from 2-3m. Scattered dead branches throughout, notably lower canopy on W side (cut back heavily from overhead utilities in the past) and south side at 4m. Further dead branch removals at 3m and 5m on E side, appearing to be dead at time of removal. Bark necrosis evident in upper canopy on W side. Appears to be in a state of worsening decline, likely compounded by recent dry summers and associated drought(s).	High	Fell to ground level and replace with at least 1no. tree.	P2 - 6 Months

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APPENDIX 4:
TREE SURVEY PLAN



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Tree Survey Plan - Sitcom, Henfield Road, Cowfold, RH13 8DW [DWG Ref. MDJAC-DAS26114-TSP-01]



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APPENDIX 5:
RESISTANCE MICRO DRILLING RESULTS



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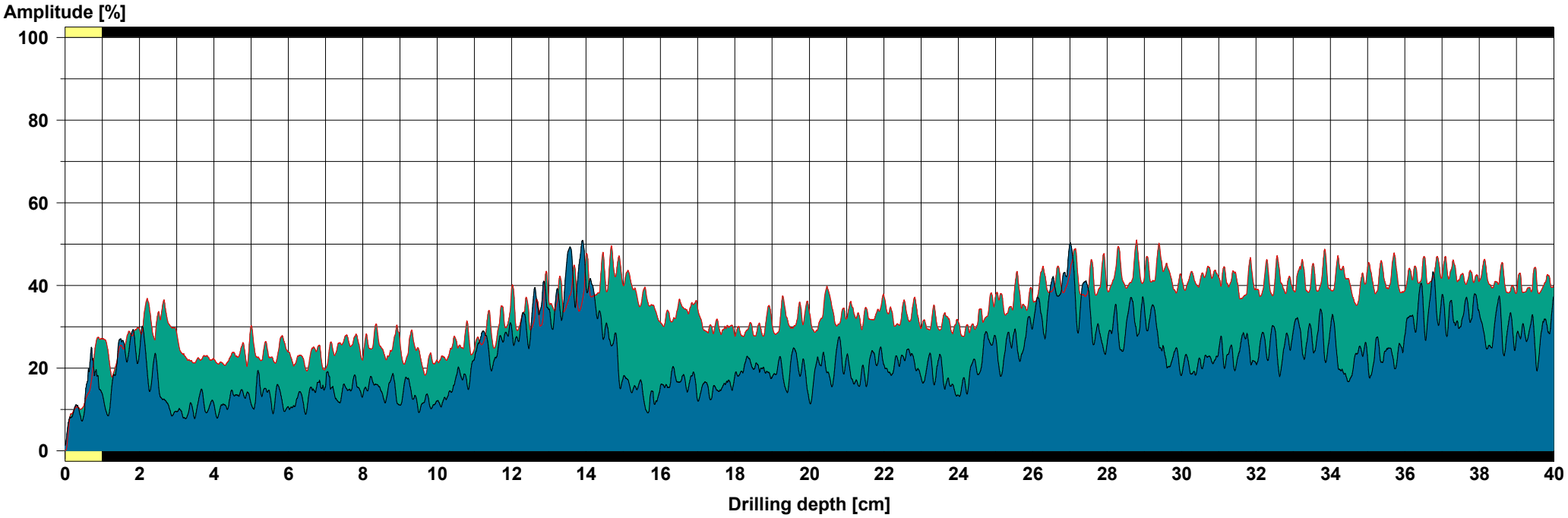
Measuring / object data

Measurement no.:	3	**Speed** :	2500 r/min	**Diameter:**	95,00 cm
ID number :	CB 3cm MP1	**Needle state:**	---	**Level** :	3cm
Drilling depth :	39,99 cm	**Tilt** :	---	**Direction:**	North - South
Date :	22.09.2026	**Offset** :	68 / 306	**Species** :	Copper beech
Time :	12:44:59	**Avg. curve** :	off / off	**Location** :	Buttress Root
Feed :	50 cm/min			**Name** :	M. Jones



Assessment

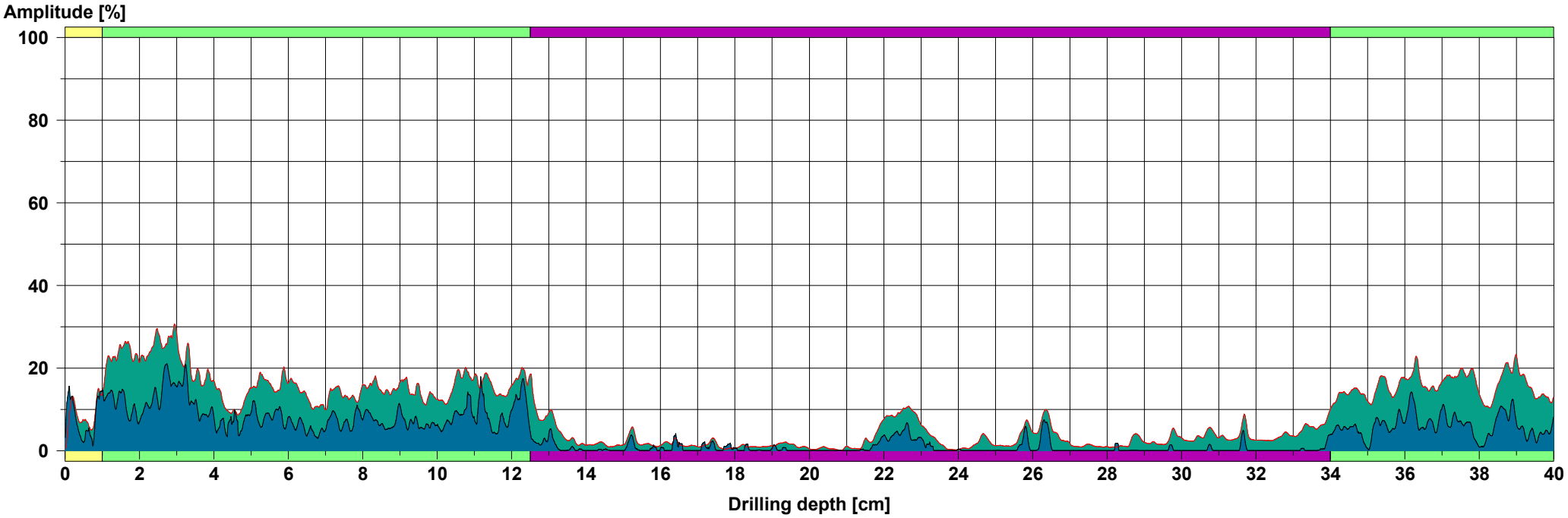
From 0,00 cm **to** 1,00 cm : Cambium/Sapwood
From 1,00 cm **to** 40,00 cm : Normal density

Comment

Normal density throughout.

Measuring / object data

Measurement no.:	4	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP2	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	NW - SE
Date	: 22.09.2026	**Offset**	: 73 / 291	**Species**	: Copper Beech
Time	: 12:46:23	**Avg. curve**	: off / off	**Location**	: Buttress Root
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

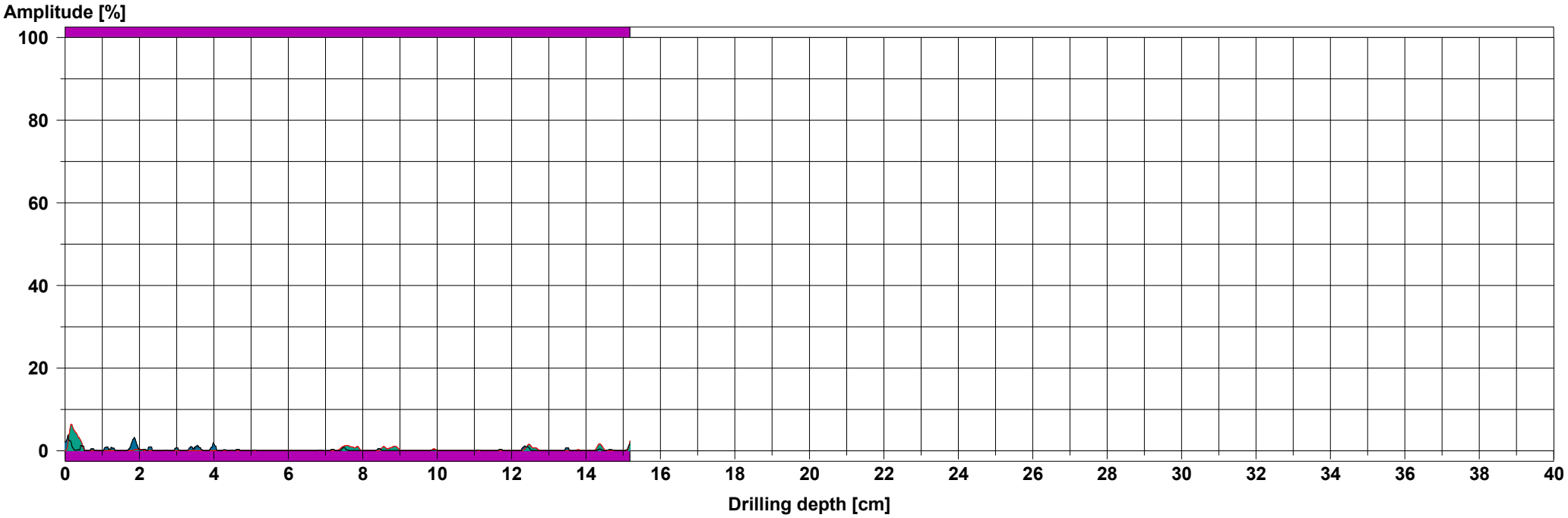
From	0,00 cm	**to**	1,00 cm	: Cambium/Sapwood
From	1,00 cm	**to**	12,50 cm	: Dysfunctional wood
From	12,50 cm	**to**	34,00 cm	: Cavity/Hollow
From	34,00 cm	**to**	40,00 cm	: Dysfunctional wood

Comment

Incipient decay towards the outer edge, cavitation from 12.5cm.

Measuring / object data

Measurement no.:	5	**Speed** :	2000 r/min	**Diameter:**	95,00 cm
ID number :	CB 3cm MP3	**Needle state:**	---	**Level** :	3cm
Drilling depth :	15,18 cm	**Tilt** :	---	**Direction:**	NW - SE
Date :	22.09.2026	**Offset** :	67 / 271	**Species** :	Copper Beech
Time :	12:48:33	**Avg. curve** :	off / off	**Location** :	Between But Roots
Feed :	50 cm/min			**Name** :	M. Jones



Assessment

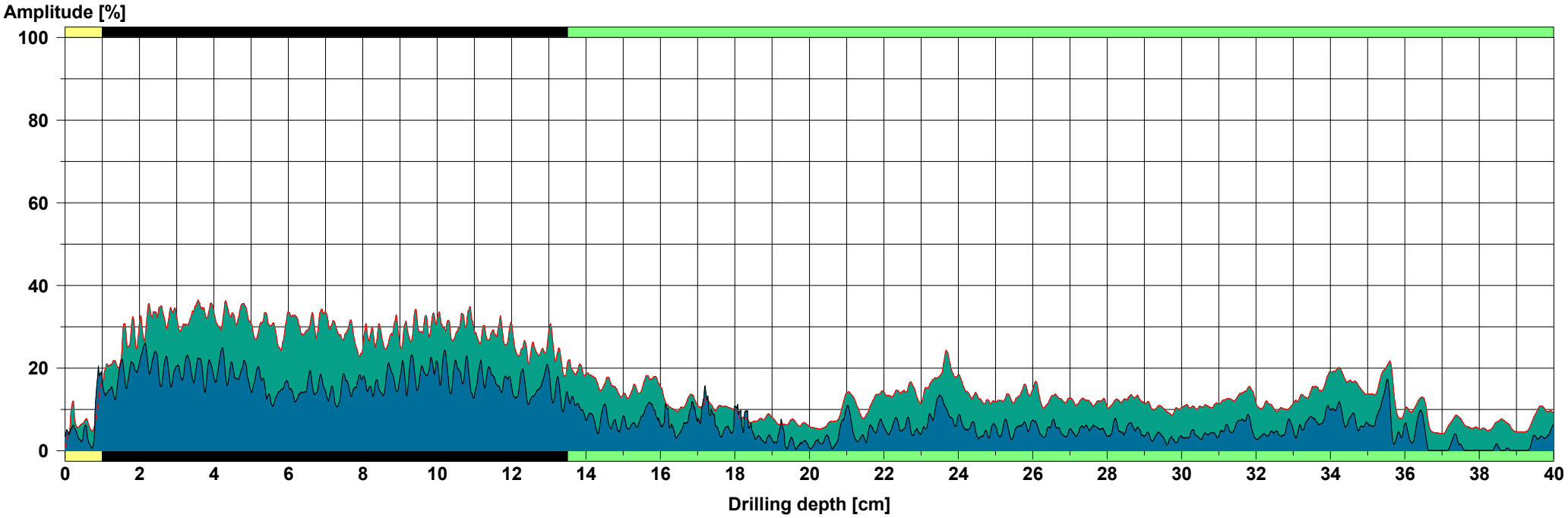
From 0,00 cm **to** 15,18 cm : Cavity/Hollow
From 15,18 cm **to** 40,00 cm : Auto Retraction

Comment

Very little resistance, indicating cavity formation. Automatic needle retraction to prevent damage due to lack of resistance.

Measuring / object data

Measurement no.:	6	**Speed** :	2500 r/min	**Diameter:**	95,00 cm
ID number :	CB 3cm MP4	**Needle state:**	---	**Level** :	3cm
Drilling depth :	39,99 cm	**Tilt** :	---	**Direction:**	West - East
Date :	22.09.2026	**Offset** :	64 / 280	**Species** :	Copper Beech
Time :	12:49:45	**Avg. curve** :	off / off	**Location** :	Buttress Root
Feed :	50 cm/min			**Name** :	M. Jones



Assessment

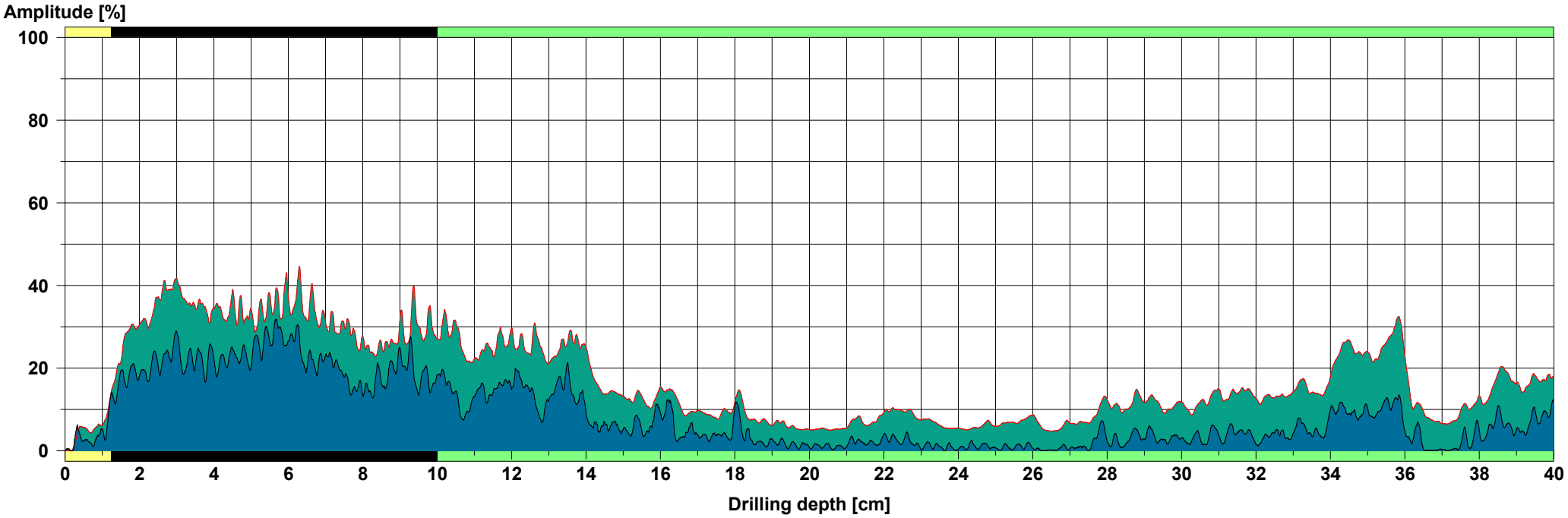
From	0,00 cm	**to**	1,00 cm :	Cambium/Sapwood
From	1,00 cm	**to**	13,50 cm :	Normal density
From	13,50 cm	**to**	40,00 cm :	Dysfunctional wood

Comment

Dynfunction from 13.5cm.

Measuring / object data

Measurement no.:	7	**Speed** :	2500 r/min	**Diameter:**	95,00 cm
ID number :	CB 3cm MP5	**Needle state:**	---	**Level** :	3cm
Drilling depth :	39,99 cm	**Tilt** :	---	**Direction:**	SW - NE
Date :	22.09.2026	**Offset** :	61 / 284	**Species** :	Copper Beech
Time :	12:51:00	**Avg. curve** :	off / off	**Location** :	Buttress Root
Feed :	50 cm/min			**Name** :	M. Jones



Assessment

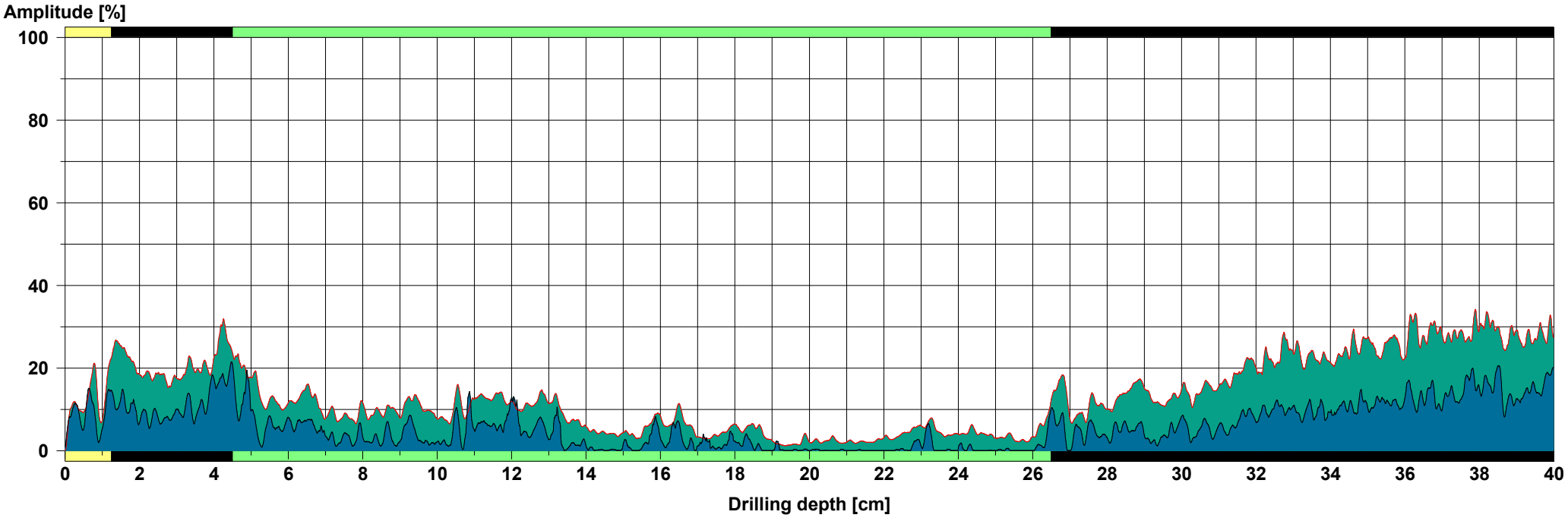
From	0,00 cm	**to**	1,25 cm :	Cambium/Sapwood
From	1,25 cm	**to**	10,00 cm :	Normal density
From	10,00 cm	**to**	40,00 cm :	Dysfunctional wood

Comment

Dysfunction beyond 10cm with very little resistance between 18cm and 28cm, suggesting early cavity formation.

Measuring / object data

Measurement no.:	8	**Speed** :	2500 r/min	**Diameter:**	95,00 cm
ID number :	CB 3cm MP6	**Needle state:**	---	**Level** :	3cm
Drilling depth :	39,99 cm	**Tilt** :	---	**Direction:**	SW - NE
Date :	22.09.2026	**Offset** :	69 / 281	**Species** :	Copper Beech
Time :	12:52:17	**Avg. curve** :	off / off	**Location** :	Between But Roots
Feed :	50 cm/min			**Name** :	M. Jones



Assessment

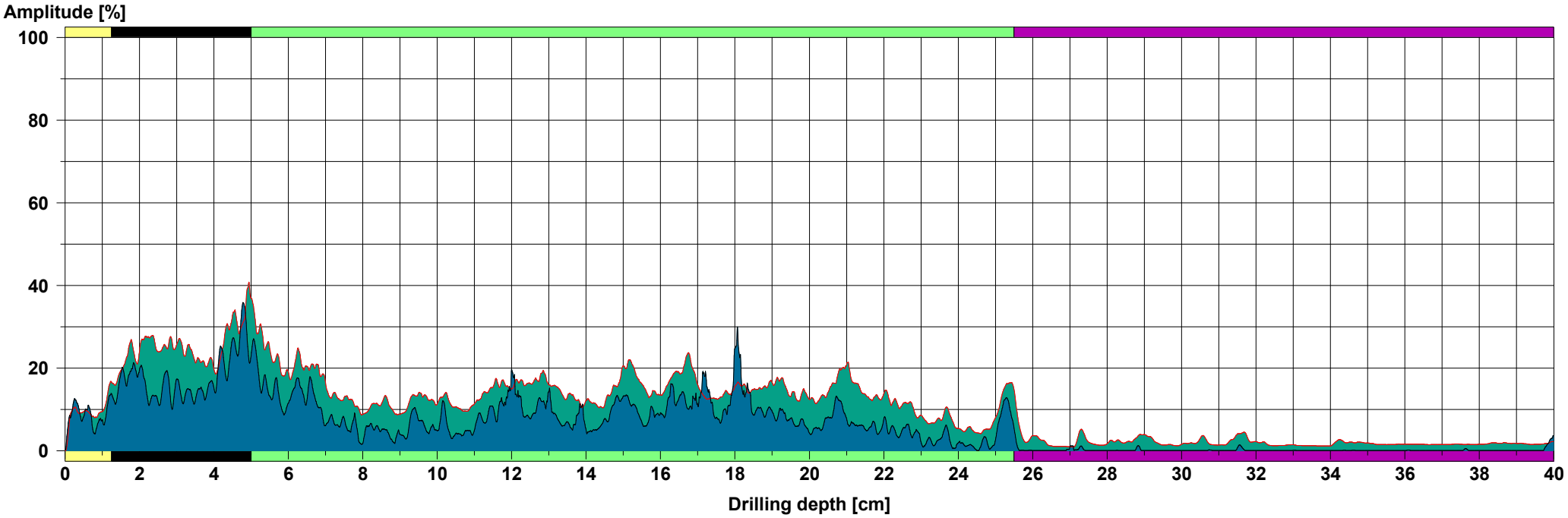
From	0,00 cm	**to**	1,25 cm :	Cambium/Sapwood
From	1,25 cm	**to**	4,50 cm :	Normal density
From	4,50 cm	**to**	26,50 cm :	Dysfunctional wood
From	26,50 cm	**to**	40,00 cm :	Normal density

Comment

Extensive dysfunction between 4.5cm and 26.5cm.

Measuring / object data

Measurement no.:	9	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP7	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	SW - NE
Date	: 22.09.2026	**Offset**	: 61 / 278	**Species**	: Copper Beech
Time	: 12:53:35	**Avg. curve**	: off / off	**Location**	: Buttress Root
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

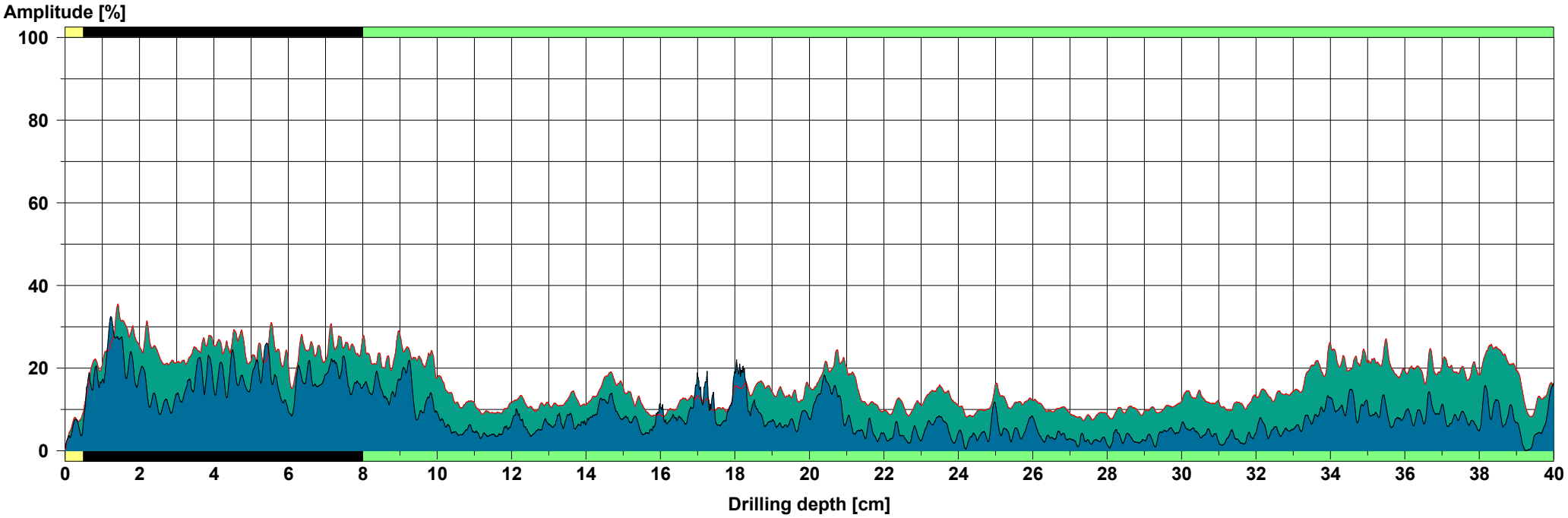
From	0,00 cm	**to**	1,25 cm	: Cambium/Sapwood
From	1,25 cm	**to**	5,00 cm	: Normal density
From	5,00 cm	**to**	25,50 cm	: Dysfunctional wood
From	25,50 cm	**to**	40,00 cm	: Cavity/Hollow

Comment

Dysfunction and cavity formation.

Measuring / object data

Measurement no.:	10	**Speed** :	2500 r/min	**Diameter:**	95,00 cm
ID number :	CB 3cm MP8	**Needle state:**	---	**Level** :	3cm
Drilling depth :	39,99 cm	**Tilt** :	---	**Direction:**	South - North
Date :	22.09.2026	**Offset** :	63 / 274	**Species** :	Copper Beech
Time :	12:54:53	**Avg. curve** :	off / off	**Location** :	Buttress Root
Feed :	50 cm/min			**Name** :	M. Jones



Assessment

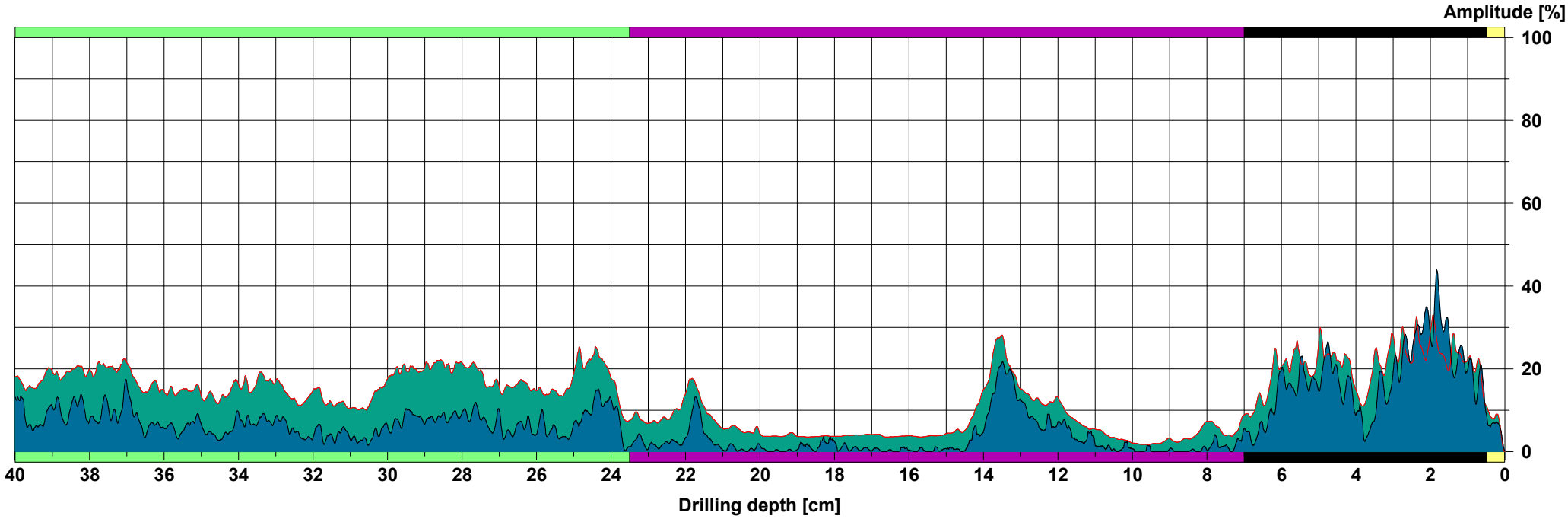
From 0,00 cm **to** 0,50 cm : Cambium/Sapwood
From 0,50 cm **to** 8,00 cm : Normal density
From 8,00 cm **to** 40,00 cm : Dysfunctional wood

Comment

Widespread dysfunction.

Measuring / object data

Measurement no.:	11	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP9	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	South - North
Date	: 22.09.2026	**Offset**	: 63 / 274	**Species**	: Copper Beech
Time	: 12:56:11	**Avg. curve**	: off / off	**Location**	: Buttress Root
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

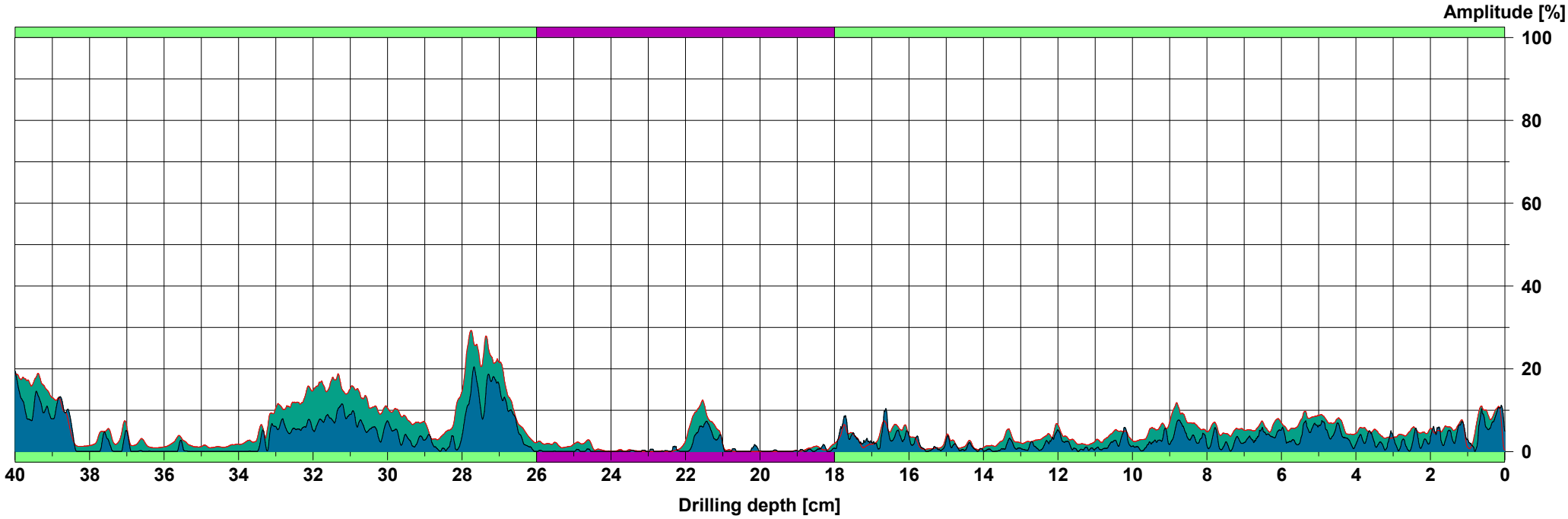
From	0,00 cm	**to**	0,50 cm	: Cambium/Sapwood
From	0,50 cm	**to**	7,00 cm	: Normal density
From	7,00 cm	**to**	23,50 cm	: Cavity/Hollow
From	23,50 cm	**to**	40,00 cm	: Dysfunctional wood

Comment

Cavitation and dysfunctional wood.

Measuring / object data

Measurement no.:	12	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP10	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	SE - NW
Date	: 22.09.2026	**Offset**	: 61 / 276	**Species**	: Copper Beech
Time	: 12:57:29	**Avg. curve**	: off / off	**Location**	: Between But Roots
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

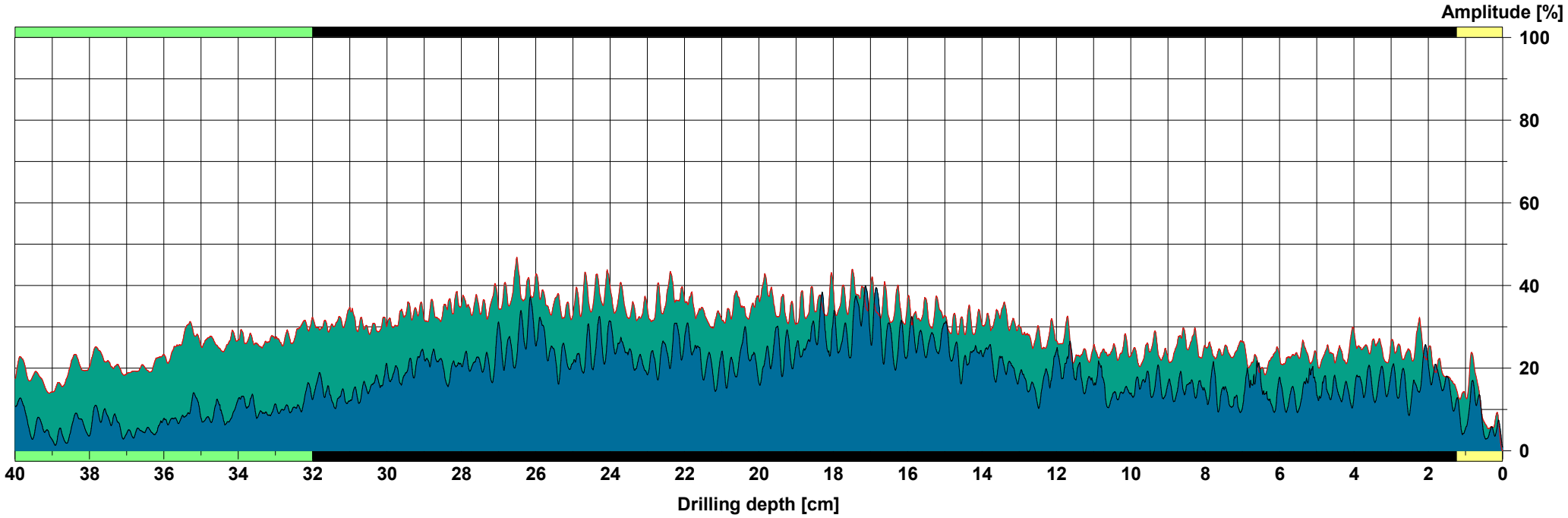
From	0,00 cm	**to**	18,00 cm	: Dysfunctional wood
From	18,00 cm	**to**	26,00 cm	: Cavity/Hollow
From	26,00 cm	**to**	40,00 cm	: Dysfunctional wood

Comment

Drilled through visible decay. Very little resistance.

Measuring / object data

Measurement no.:	13	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP11	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	SW - NE
Date	: 22.09.2026	**Offset**	: 68 / 275	**Species**	: Copper Beech
Time	: 12:59:21	**Avg. curve**	: off / off	**Location**	: Between But Roots
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

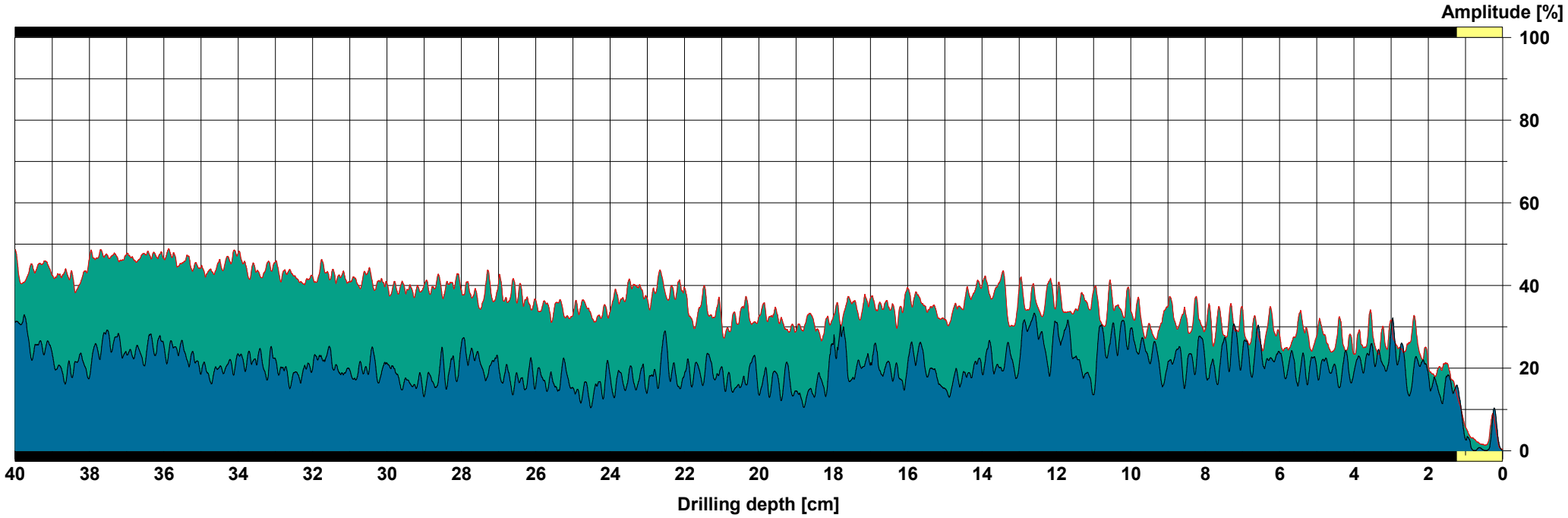
From	0,00 cm	**to**	1,25 cm	: Cambium/Sapwood
From	1,25 cm	**to**	32,00 cm	: Normal density
From	32,00 cm	**to**	40,00 cm	: Dysfunctional wood

Comment

Broadly sound.

Measuring / object data

Measurement no.:	14	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP13	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	East - West
Date	: 22.09.2026	**Offset**	: 70 / 277	**Species**	: Copper Beech
Time	: 13:00:53	**Avg. curve**	: off / off	**Location**	: Buttress Root
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

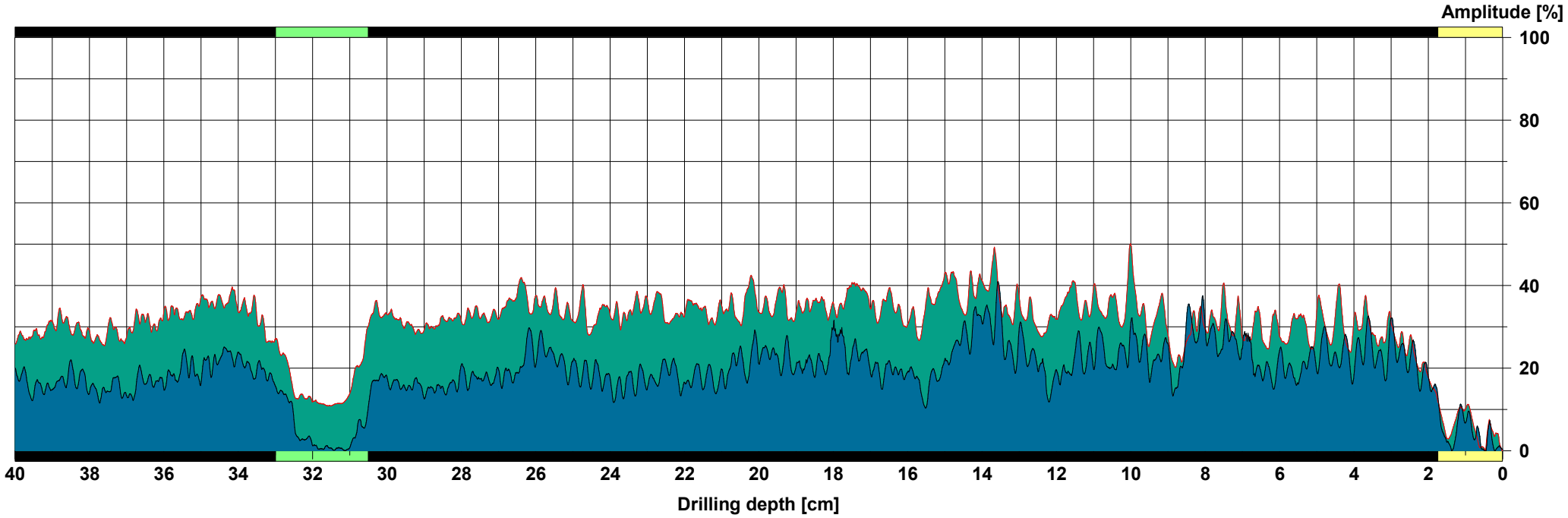
From 0,00 cm **to** 1,25 cm : Cambium/Sapwood
From 1,25 cm **to** 40,00 cm : Normal density

Comment

Broadly sound.

Measuring / object data

Measurement no.:	15	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP15	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	East - West
Date	: 22.09.2026	**Offset**	: 65 / 276	**Species**	: Copper Beech
Time	: 13:02:09	**Avg. curve**	: off / off	**Location**	: Buttress Root
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

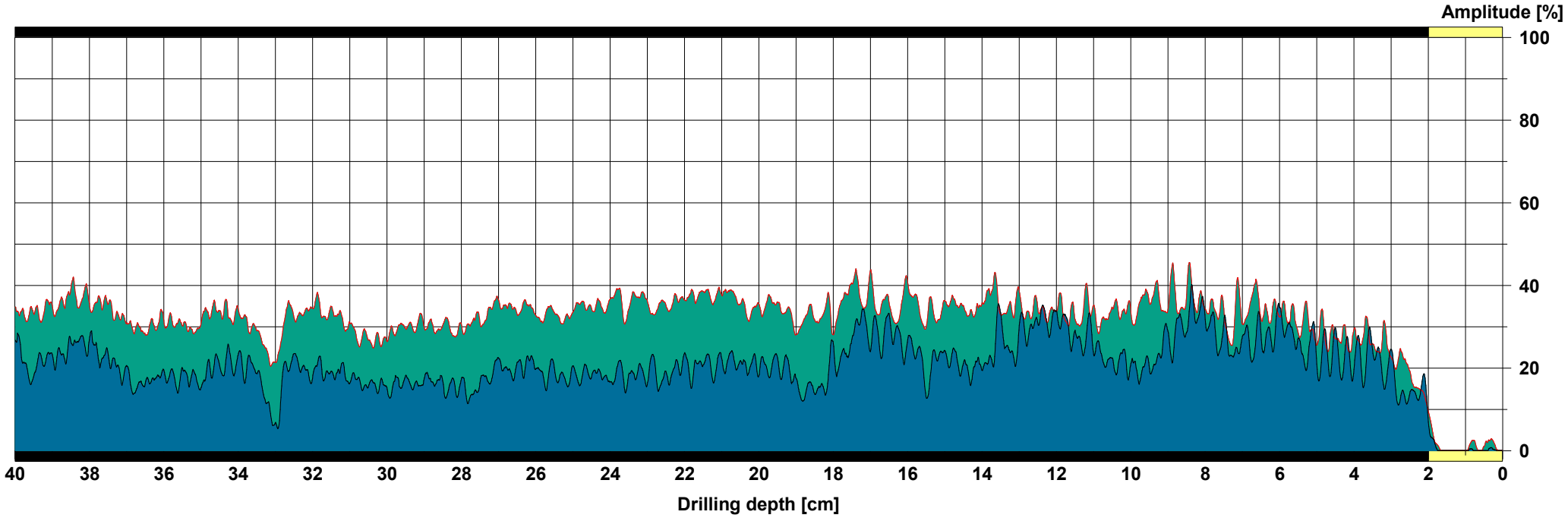
From	0,00 cm	**to**	1,75 cm	: Cambium/Sapwood
From	1,75 cm	**to**	30,50 cm	: Normal density
From	30,50 cm	**to**	33,00 cm	: Dysfunctional wood
From	33,00 cm	**to**	40,00 cm	: Normal density

Comment

Broadly sound.

Measuring / object data

Measurement no.:	16	**Speed**	: 2500 r/min	**Diameter:**	95,00 cm
ID number	: CB 3cm MP16	**Needle state:**	---	**Level**	: 3cm
Drilling depth	: 39,99 cm	**Tilt**	: ---	**Direction:**	NE - SW
Date	: 22.09.2026	**Offset**	: 68 / 269	**Species**	: Copper Beech
Time	: 13:03:26	**Avg. curve**	: off / off	**Location**	: Buttress Root
Feed	: 50 cm/min			**Name**	: M. Jones



Assessment

From 0,00 cm **to** 2,00 cm : Cambium/Sapwood
From 2,00 cm **to** 40,00 cm : Normal density

Comment

Broadly sound.