Urban Tree Experts

BS5837 – Tree Surveys – Ecological Consulting

Bramley House
Newnham Bridge
Tenbury Wells
WR15 8NX
Tel:
Mobile: [redacted]

21 February 2024

Mrs J Biggs
40 Horatio Avenue
Warfield
Bracknell
RG42 3TX

Ref: SPH/DD-24/20.02

Dear Mrs Biggs

Re: Decay Detection at 40 Horation Avenue, Warfield, Bracknell, RG42 3TX.

Thank you for your instructions to undertake decay detection upon 1 mature oak tree located to the side of 40 Horatio Avenue. A summary of our findings is included in accordance with your instructions.

Site visit:
The site visit was undertaken on 20 February 2024 by Simon Holmes MSC. MICFor. of Urban Tree Experts. The conditions were dry and overcast, we had full access to the tree.

The tree measurements were recorded using a TruPulse™ hypsometer and rounded down diameter tape; the results are recorded in Table 1 below.

Table 1

Tree Number	Tree Species	Height (m)	Diameter (mm) @ 1.5m AGL	Age Class
T1	Oak	18	1280	Mature

Key to abbreviations:
m = metres, mm = millimetres, cm = centimetres, AGL = above ground level, est = estimated

Age Class: Mature - trees within the final third of the useful life expectancy for the species.

Decay Detection
The tree was tested with a Picus Sonic Tomograph using 14 sonic sensors and the IML Resi PD400 decay detection drill. For convenience we have set out below the test protocols and procedures with an overview of the equipment used.

Resi PD400 (Synopsis):
The Resi PD400 (Resi) is a mechanical drilling machine with a constant drive, which measures the drilling resistance and rotational speed along a needle, when inserted into the tree. The result is displayed on a digital panel and stored electronically at a scale of 1:1, measurement is in metric units.

The object data field (top left of each page) provides information on the date, depth, needle speed and site-specific information. The assessment field (bottom left of each page) provides a detailed analysis of specific areas of dysfunction and is often colour coded. Readings are normally from right (entry into the tree) to left, with any specific comments in the box bottom right.

The drilling rate may be varied for hard or soft woods. The drilling resistance is correlated with the mechanical properties and the defective areas that have developed within the tree may be detected and assessed.

Examples of defects detected by the Resi may be dysfunctional areas such as internal cracks, areas of decay, resin pockets and hollows. Remaining wall thickness may be determined to a depth of 400 millimetres. The instrument is adept at detecting the early stages of decay in white rots as well as detecting brown rots at an early stage.

The drilling needle is specially formed, and the tip is only 3 millimetres wide with a shaft diameter of 1.5 millimetres, thereby keeping internal damage to a minimum and reducing the risk of further fungal infection.

Picus Sonic Tomograph (Synopsis).
Is a specialised electronic instrument which 'looks' at the internal structure of a tree. It consists of between 8 to 14 special sonic sensors. The sensors are spaced out evenly around the circumference of the trunk and aligned with nails driven into the bark. Sound waves are generated by tapping the nails with a hammer. By calculating the distance between the nails and measuring the speed that the sound takes to pass through the wood, an idea of its condition can be obtained. Working on the principal that sound travels fastest through solid wood, the extent of anomalies such as decay, cracks or cavities can be mapped. The computer software produces a visual image that requires professional assessment to interpret.

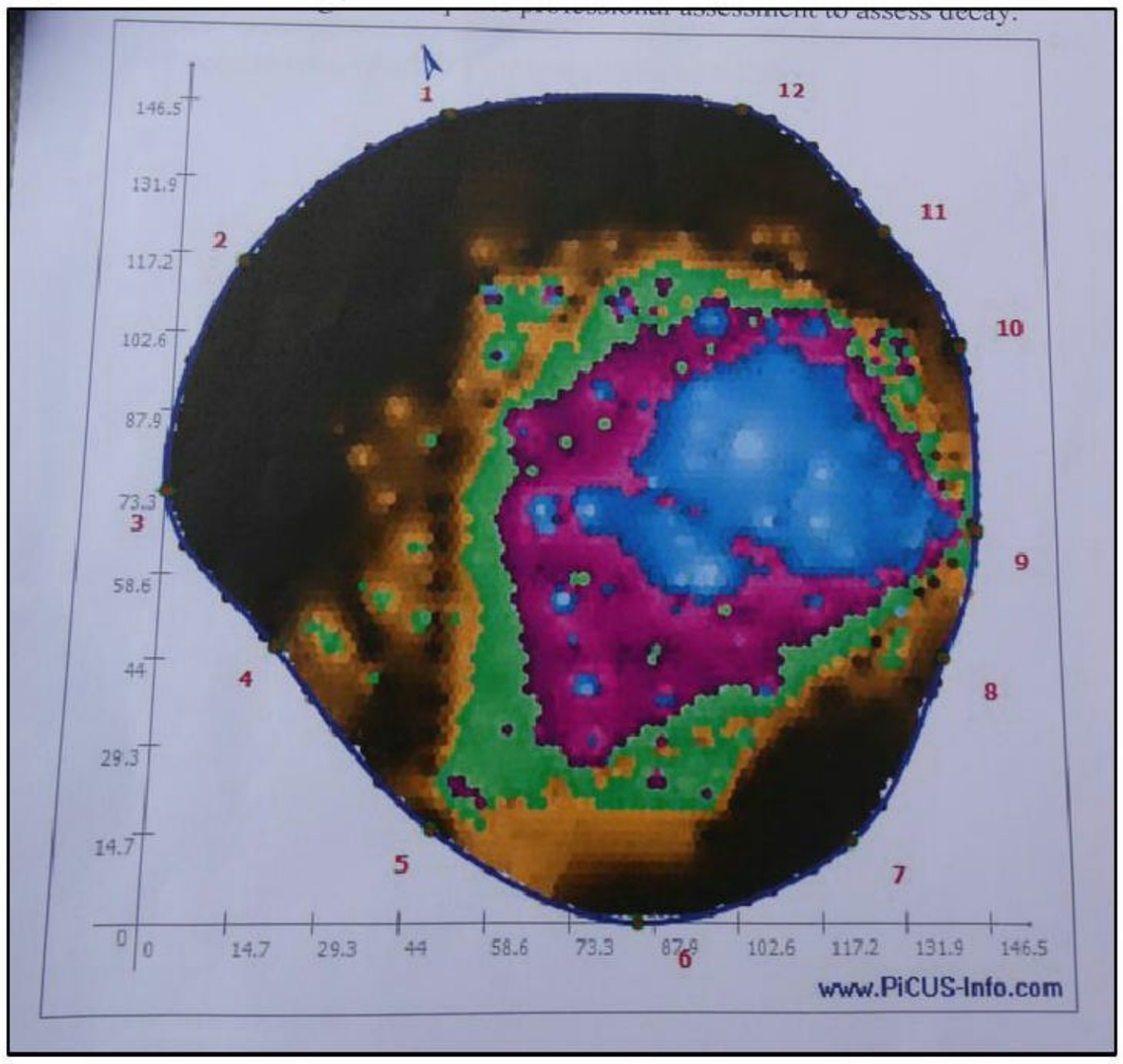
Black and brown areas of the tomogram are indicative of sound wood. Advanced decay is indicated by the areas in blue and pink. Green areas are often associated with the early stages of fungal colonisation however, further detailed investigations may be required to corroborate the findings.

Tree Location:
The tree is located within a small, detached garden to the west of the building. It is approximately 10 metres from the side elevation of 40 Horatio Avenue and is within falling distance of the property should it fail.

Background:
The tree was subjected to a Picus Tomograph test on 1 August 2017 by Kim Dear of Atworth Arboriculture Ltd, undertaken on behalf of Fernoak Tree Surgeons. The Tomogram, copy included below at Figure 1, revealed an area of decay and hollowing on the east side of the stem adjacent to sensor number 9. Recommendations made within the Atworth Arboriculture Ltd report were ambiguous and lacked any specific or measured dimensions.

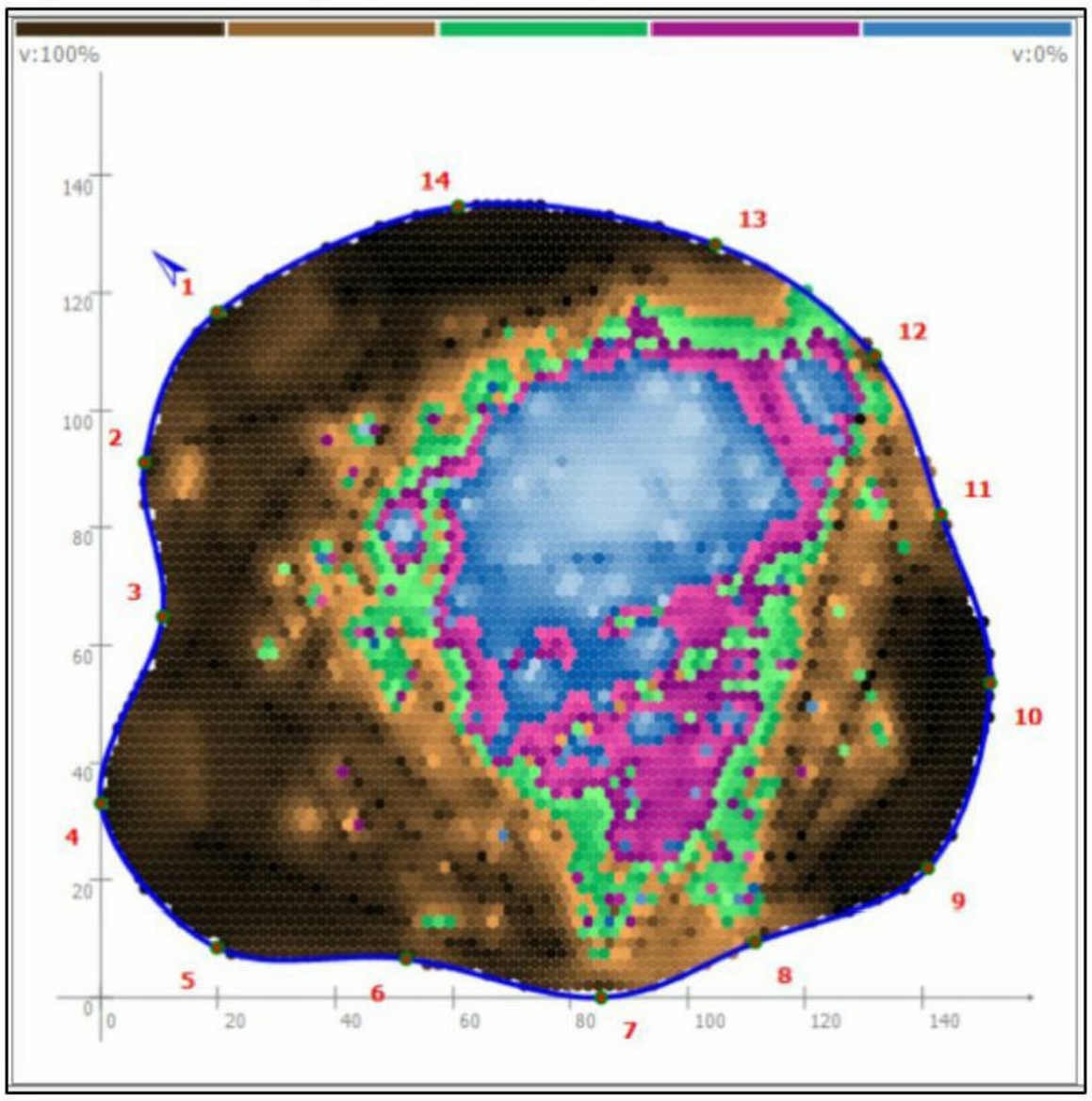
A search of the Bracknell Forest Council online planning register found application 24/00001/TRTPO made by Mr Daniel Jones, a neighbour of 40 Horatio Avenue, that at the time of this report had not been determined.

Figure 1: Tomogram undertaken by Atworth Arboriculture Ltd (2107)



Findings and opinion:
We used 14 sensors to obtain a sonic tomogram, see Figure 2 below.

Figure 2: Tomogram undertaken on 20.02.2024



The tree was also drilled with the IML Resi PD400 a total of 5 times. Drillings were undertaken adjacent to sensor 12, both horizontally and at an angle into the root plate, at sensor 6, sensor 8 and at 1.5 metres above ground level (AGL) as a means of control.

Both Tomograms show changes in wood density (white, blue and purple pixels) however, it is not possible to do a direct comparison of the results due to differences in the tree geometry and number of sensors used.

What is clear in both Tomograms is the area of decaying wood (white and blue pixels) on the eastern side of the main stem at ground level. The decaying area was also corroborated with the Resi drillings that isolated the decay shown in both Tomograms.

We also examined the root collar as there was a lack of buttressing. This is most likely due to the surrounding ground level having been raised. When we probed the root collar with a 600 millimetre stainless probe we found evidence of decay on the north, northeast and east sides varying between 300 and 600 millimetres in depth, see examples of probe areas at Figure 3 below.

Figure 3

The extent and location of decay (ground level) increases the risk of stem failure at or close to ground level and, as the tree is located in a high-risk location, remedial measures are required to ensure the safety of residents and visitors to the site.

We are unable to positively confirm if the root system of this tree is compromised by decay as the original ground level has been raised covering the lower stem and buttressing. The decay detected is most probably affecting the stem above the measuring location and in equal measures below this level too. Whilst it is recognised that the sonic tomogram measures a relatively small cross section of the stem, IML drilling provided a tangible indication of actual decay.

Recommendations:
The biomechanical loading on the stem must be reduced to prevent failure. This can only be achieved by remedial pruning (canopy reduction) or felling. In considering the options reducing the canopy will lower the wind loading and reduce the risk of failure but may not prevent it. However, once pruned the canopy will require regular remedial work to maintain the size. Therefore, due to the tree's location and the extent of decay detected we recommended that the tree is felled to ground level and the stump ground out to a depth of approximately 300 millimetres below ground level. All works should be carried out within 3 months from the date of this report.

If the retention of the tree is a priority, a crown reduction of 2 metres to leave a finished height of approximately 16 metres should be undertaken. The crown lateral growth should be reduced to provide a suitable framework for redevelopment and be balanced to meet the natural characteristics of the tree that are in line with good arboricultural practice.

The tree's location, risk of failure, presence of decay in the main stem at ground level and the added stress a reduction may place on the tree will require more frequent inspections and if the tree is retained an annual inspection by a suitably qualified person should be undertaken every 12 months.

We trust that our investigations and findings are of assistance to you. Should you have any queries or concerns please do not hesitate to contact us.

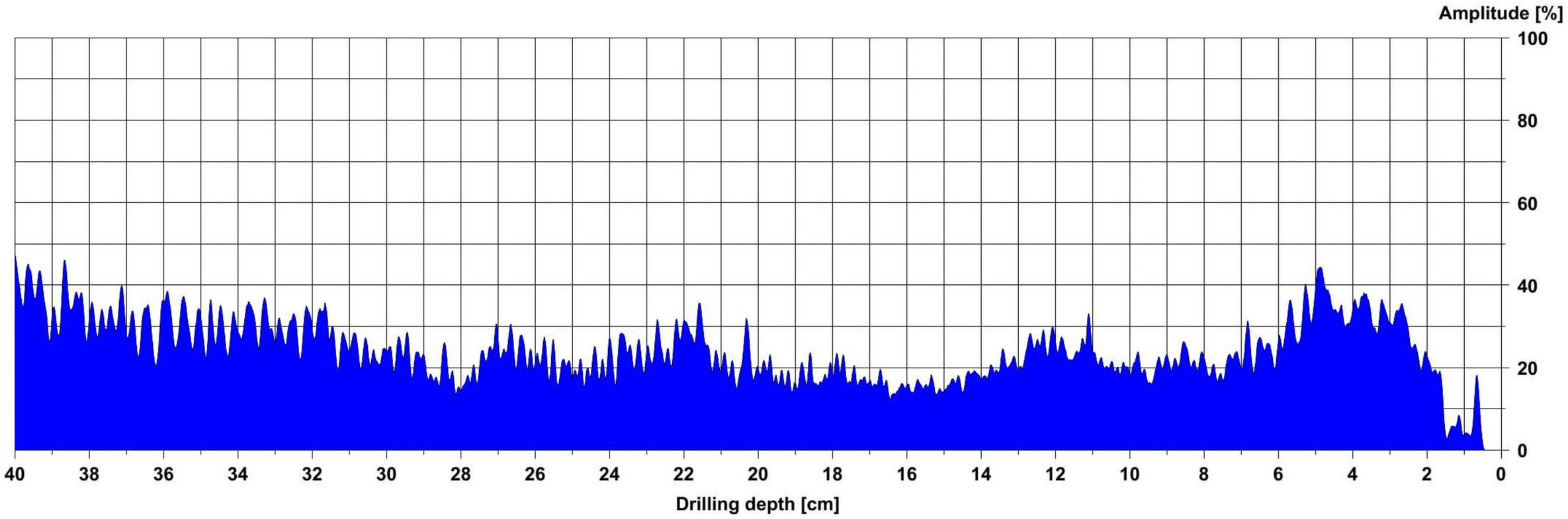
Yours sincerely

[redacted]

Simon Holmes MSc. MICFor.
Chartered Arboriculturist
Tree Surveys and Urban Tree Experts
[redacted]
www.tree-surveys.com

Measuring / object data

Measurement no.:	5	**Speed**	: 2500 r/min	**Diameter:**	128,00 cm
ID number	: HORATIO	**Needle state:**	---	**Level**	: 150cm
Drilling depth	: 40,00 cm	**Tilt**	: 0°	**Direction:**	North
Date	: 20.02.2024	**Offset**	: 87 / 285	**Species**	: Oak
Time	: 12:45:51	**Avg. curve**	: off / off	**Location**	: 40 Horatio Av
Feed	: 150 cm/min			**Name**	: Mrs J Biggs



Assessment

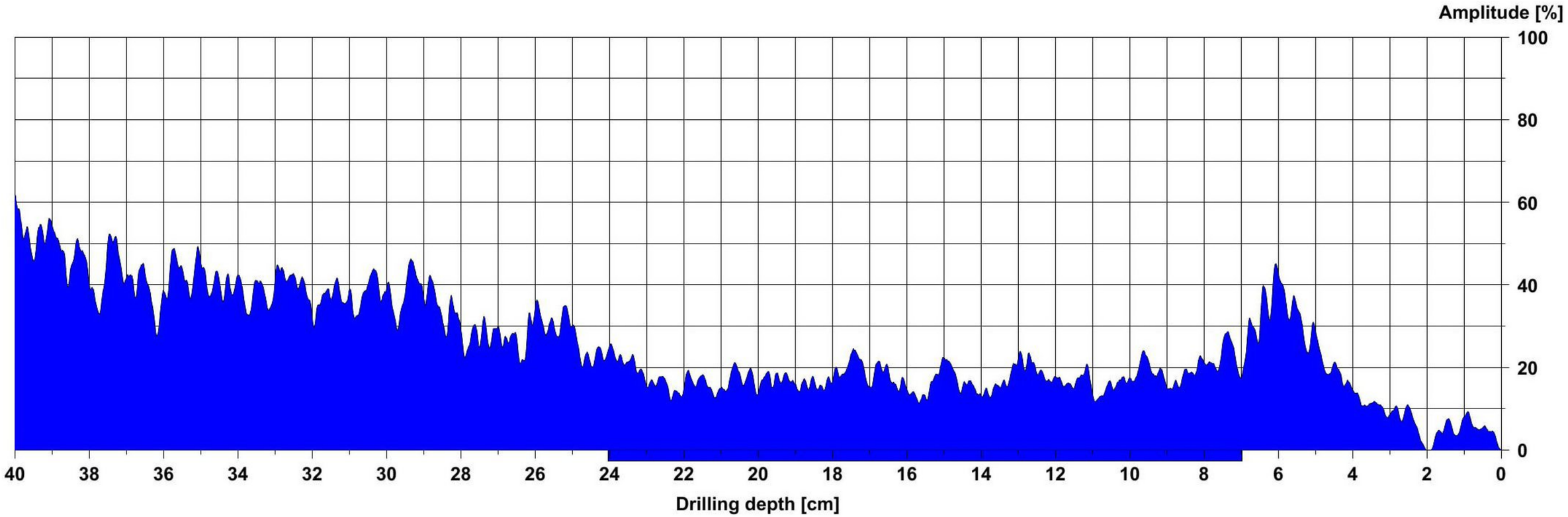
Comment

Control test at 1.5m AGL.
No significant decay at the test location

Measurement005

Measuring / object data

Measurement no.	3	**Speed**	2500 r/min	**Diameter**	128,00 cm
ID number	HORATIO	**Needle state**	---	**Level**	30cm
Drilling depth	40,00 cm	**Tilt**	-50°	**Direction**	Sensor 6 50 degrees
Date	20.02.2024	**Offset**	92 / 472	**Species**	Oak
Time	12:43:35	**Avg. curve**	off / off	**Location**	40 Horatio Av
Feed	150 cm/min			**Name**	Mrs J Biggs



Assessment

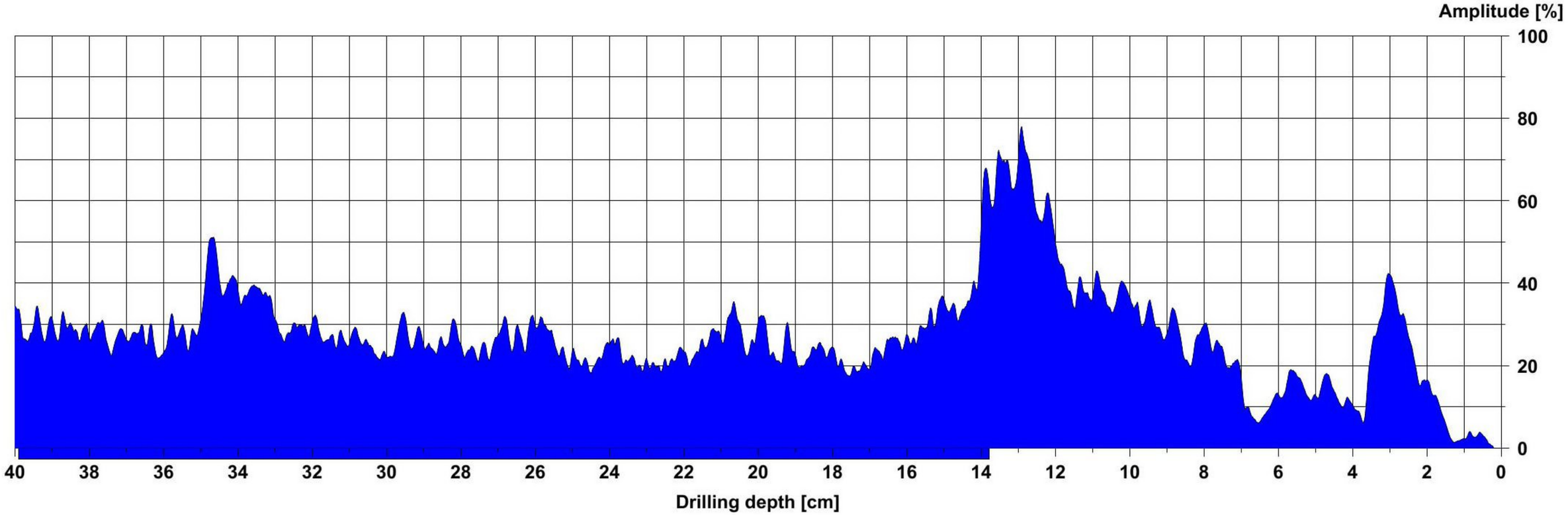
From 6,98 cm **to** 24,03 cm : Incipient decay

Comment

Test adjacent to Picus sensor 6 but at 50 degrees into the root plate, incipient decay/low wood density from 7 to 24cm

Measuring / object data

Measurement no.:	4	**Speed** :	2500 r/min	**Diameter:**	128,00 cm
ID number :	HORATIO	**Needle state:**	---	**Level** :	30cm
Drilling depth :	40,00 cm	**Tilt** :	-63°	**Direction:**	Sensor 8
Date :	20.02.2024	**Offset** :	78 / 286	**Species** :	Oak
Time :	12:44:49	**Avg. curve** :	off / off	**Location** :	40 Horatio Av
Feed :	150 cm/min			**Name** :	Mrs J Biggs



Assessment

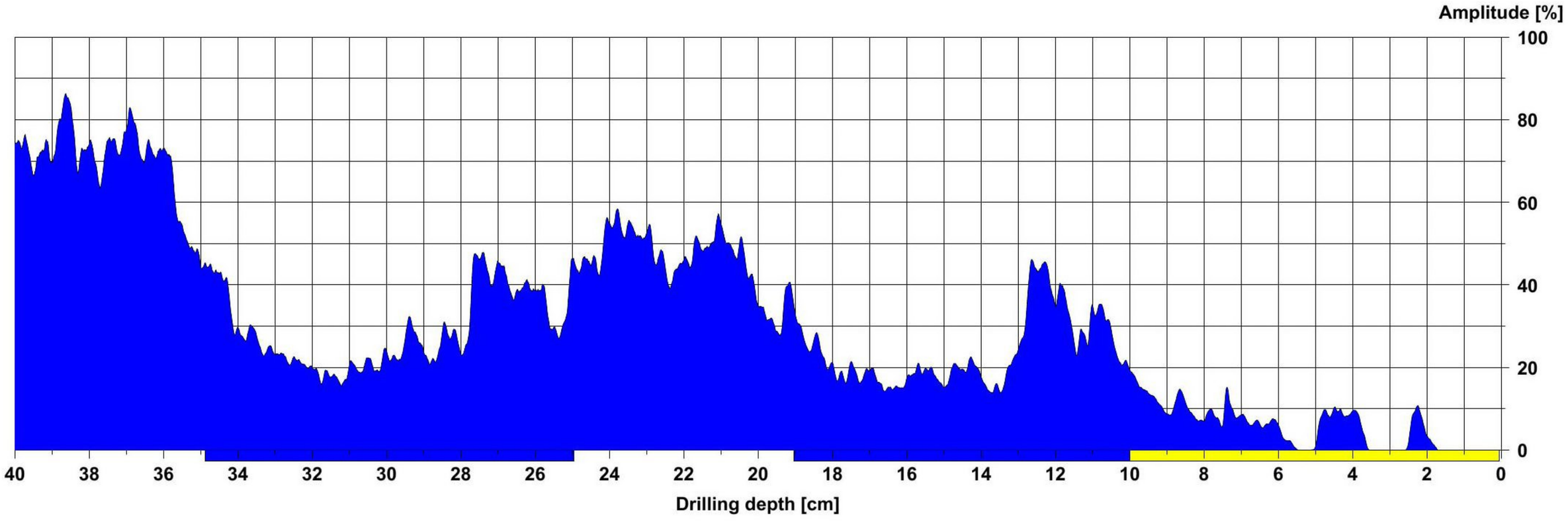
From 13,79 cm **to** 39,91 cm : Incipient decay

Comment

Test adjacent to Picus sensor 8 at an angle of 63 degrees resulted in low wood density due to decay from 14cm.

Measuring / object data

Measurement no.:	2	**Speed** :	2500 r/min	**Diameter:**	128,00 cm
ID number :	HORATIO	**Needle state:**	---	**Level** :	30cm
Drilling depth :	40,00 cm	**Tilt** :	-45°	**Direction:**	45 degrees
Date :	20.02.2024	**Offset** :	90 / 292	**Species** :	Oak
Time :	12:42:26	**Avg. curve** :	off / off	**Location** :	40 Horatio Av
Feed :	150 cm/min			**Name** :	Mrs J Biggs



Assessment

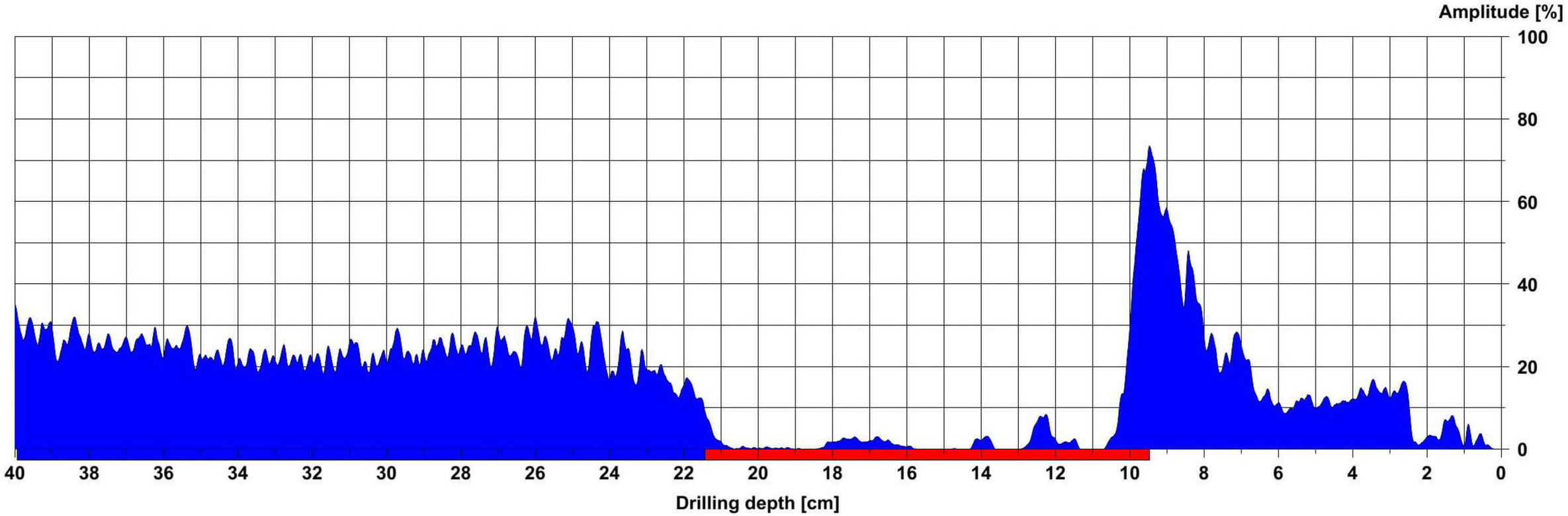
From	0,06 cm	**to**	9,99 cm	: Decay
From	9,99 cm	**to**	19,03 cm	: Incipient decay
From	24,95 cm	**to**	34,88 cm	: Incipient decay

Comment

Test adjacent to Picus sensor 12 undertaken at 45 degrees into root plate 12 confirming very irregular wood density due to decay.

Measuring / object data

Measurement no.	1	**Speed**	2500 r/min	**Diameter**	128,00 cm
ID number	40 HORATIO AV	**Needle state**	---	**Level**	30cm
Drilling depth	40,00 cm	**Tilt**	0°	**Direction**	MP12
Date	20.02.2024	**Offset**	97 / 288	**Species**	Oak
Time	12:41:38	**Avg. curve**	off / off	**Location**	40 Horatio Av
Feed	150 cm/min			**Name**	Mrs J Biggs



Assessment

From 9,47 cm **to** 21,49 cm : Cavity
From 21,43 cm **to** 39,94 cm : Incipient decay

Comment

Test adjacent to Picus sensor 12 confirming cavity from 10cm and low wood density due to decay from 22cm.