ARTEMIS TREE SERVICES

Site
Falcon Close
Northwood
HA6 2GU

Prepared for
Iris Kurzon

Prepared by
Oliver Coleman
FdSc Arb, DipHE Arb L5

28th November 2024

Decay Detection DD-32865

Artemis Tree Services Ltd
West Hyde Nursery, Old Uxbridge Road, West Hyde, Rickmansworth, Herts WD3 9XY
T: 01895 821623 **E:** office@artemistreeservices.com **W:** www.artemistreeservices.com

ARTEMIS TREE SERVICES

Table of Contents

1. Brief

1.1 Artemis Tree Services ltd has been instructed by Iris Kurzon to undertake decay detection investigation of one Oak tree (*Quercus robur*) using a Resistograph PD400 microdrill and provide recommended management actions based on our findings.

1.2 The investigation has been promoted by the discovery of a fungal fruiting bodies at the base of the trunk.

2. Report limitations

2.1 Climbing inspections have not been carried out as part of the investigation.

2.2 Conclusions and recommendations relate to the condition of the site and tree at the time of the inspection only. Comments valid for a period of 1-year from the date of this report.

2.3 By their very nature, trees can never be entirely free of risk. The laws and forces of nature dictate a failure rate, even among intact trees with no apparent defects. The recommendations in this report cannot guarantee the elimination of all risk.

2.4 The report does not include risk assessment of trees in relation to subsidence.

3. Introduction

3.1 Qualifications

3.1.1 I hold an FdSc in Arboriculture from Northampton University and Level 5 HE Diploma in Arboriculture from Moulton College. I have also passed the Lantra Professional Tree Inspection course (PTI).

3.2 Site Description

3.2 The property is a private residential development with the tree located within the western gardens.

3.3 Trees

3.3.1 The tree in question is a mature Oak (*Quercus robur*). Full tree details and observations from the initial visual assessment are recorded in Appendix 1.

4. Methodology

4.1 Decay detection was undertaken using a Resistograph Resi-PD400 microdrill. The Resi-PD400 accurately measures the drilling and feed resistance along a needle as it is inserted at a constant rate into the wood of a tree. This enables small changes of internal wood structure to be detected. Readings from each drilling can be found in Appendix 2 of this report.

4.2 Tree height was recorded using a Haglofs Digital Clinometer and laser distance measurement device. Stem diameter measurement was recorded using a diameter measuring tape.

5. Documents provided

- Tree survey schedule (Appendix 1.)
- Resistograph drill readings (Appendix 2.)

6. Findings

6.1 Decay detection

6.1.1 The tree was drilled a total of 12 times. It was drilled at cardinal and intercardinal points at 0.1m above ground level. It was then drilled at the cardinal points at 0.5m above ground level. The west side was unsuitable for drilling due to the proximity of the stem to the adjacent fence.

6.1.2 Tables 1 provides an interpretation of the readings. The reading graphs are included in Appendix 2.

Table 1

Tree ref.	Drill ID#	Position	Interpretation
T4	12	0.1m North	Typical amplitude for sound wood up to 36.4cm depth. Drop in amplitude at 36.4-37.5cm indicating small area of decay. Average amplitude appears slightly low overall, possible indication of initial stage decay.
T4	13	0.1m North East	Measurement taken adjacent to fungal fruiting body. Typical amplitude for sound wood up to around 2cm depth. Lower than typical amplitude at 7-13cm depth indicating initial stages of decay. Significant drops in amplitude 2-7cm and 13-28.2cm depths indicating advanced decay/hollowing. Automatic retraction of drill from 28.2cm due to cavity formation.
T4	14	0.1m East	Typical amplitude for sound wood up to 2cm depth. Drop in amplitude at 2-11.5cm depth indicating advanced decay/hollowing. Automatic retraction of drill from 11.5cm due to cavity formation.
T4	15	0.1m South East	Measurement taken into buttress root formation. Typical amplitude for sound wood up to 9.5cm depth. Drop in amplitude at 9.5-26.8cm depth indicating advanced decay/hollowing. Automatic retraction of drill from 26.8cmcm due to cavity formation.
T4	16	0.1m South	Typical amplitude for sound wood up to 2cm depth. Drop in amplitude at 2-19.7cm depth indicating advanced decay/hollowing. Automatic retraction of drill from 19.7cm due to cavity formation.
T4	17	0.1m South West	Typical amplitude for sound wood up to 2cm depth. Drop in amplitude at 2-38cm depth indicating advanced decay/hollowing. Automatic retraction of drill from 38cm due to cavity formation.
T4	18	0.1m South-South West	Typical amplitude for sound wood up to 38.5cm depth. Drop in amplitude at 38.5-40cm depth indicating advanced decay.
T4	19	0.1m North West	Typical amplitude for sound wood up to 27.5cm depth. Drop in amplitude at 27.5-34.7cm depth indicating advanced decay/hollowing. Automatic retraction of drill from 34.7cm due to cavity formation.
T4	20	0.5m North	Typical amplitude for sound wood up to 3cm depth. Drops in amplitude at 3-5cm and 36-37cm depths indicating advanced decay/hollowing. Average amplitude appears slightly low overall, possible indication of initial stage decay.
T4	21	0.5m East	Average amplitude appears slightly low overall, possible indication of initial stage decay.

Tree ref.	Drill ID#	Position	Interpretation
T4	22	0.5m South	Average amplitude appears slightly low overall, possible indication of initial stage decay.
T4	23	0.5m North-North West	Average amplitude appears slightly low overall, possible indication of initial stage decay.

7. Analysis

7.1 Based on the drill readings (Table 1), the trunk has less than 33% remaining sound wood at ground level, and at approximately 95% remaining sound wood at 0.5m from ground level indicating the majority of decay is towards the base of the stem.

7.2 The diameter of the tree (130cm) is larger than the depth possible to measure to with the machinery (40cm radius), Given the decay strategy of the fungal fruiting bodies on the stem (*Ganoderma australe*), it is highly likely (and been assumed) that the heartwood has been compromised and has areas of decay/hollowing.

7.3 Using Mattheck and Breoler's "t/R ratio", which suggests that a tree should have a minimum of 33% holding wood across the radius of the stem, tree T1 should have a minimum of 42.9cm sound wood around the outside of the stem.

7.4 The areas of decay appear to be towards the Eastern and Southern sides of the stem with some buttress root formation as a result, though these also appear to have been compromised (see reading '15'). There are multiple senescent and desiccated fungal fruiting bodies around the base of the stem, indicating the infection has been present for a significant period of time.

7.5 The tree is opposite a school and adjacent to a bus stop, public footpaths and roads. It is also within target area of the building at Falcon Close.

8. Conclusions

8.1 Following the decay detection investigation, it is my opinion that the tree currently poses a moderate to high risk of harm to people and property.

8.2 The tree would cause significant damage if failure were to occur and removal would be the only way to eliminate the risk (i.e. pollarding would reduce the target area, though failure is a likely outcome given the lack of significant holding wood in the readings).

9. Recommendations

9.1 Remove the tree as soon as reasonably practicable to eliminate the risk to people and property.

Appendix 1

ARTEMIS TREE SERVICES

Tree Ref.	Species	Height (m)	Stem diameter (cm)	Crown spread (m)	Age class	Physiological condition	Structural condition	Observations
T4	Oak (*Quercus robur*)	17	135 @ base 130 @ 1.5m	16	M	G	G	Lateral growth historically pruned with some decay of wood visible at wounds. 2x Larger wounds from pruning at 3-3.5m show typical wound wood development and some decay of exposed wood. Fungal fruiting body on NE side of stem at base with the appearance of *Ganoderma australe*. Small area of audible decay around fungi. Minor deadwood in crown, typical of species. Multiple senescent/desiccated fungal fruiting bodies to SE, S, SW and NW with some localised audible hollowing, indicates fungal infection has been present for a significant period of time.

Appendix 1

ARTEMIS TREE SERVICES

Survey Key

Diameter (mm)
Stem diameter in millimetres measured at 1.5m above ground level. Where the stem is divided below 1.5m, measurement is taken as directed by BS:5837 Annex C.

Branch Spread (m)
Radial crown spread in metres, measured for each of the four cardinal points of the compass from the centre of the trunk.

Age class
(NP) Newly planted – a tree within 3 years after planting
(Y) Young – a tree within its first one third of life expectancy
(EM) Early Mature – a tree within its second third of life expectancy
(M) Mature – a tree in its final one third of life expectancy
(OM) Over Mature – a tree having reached its maximum life span and is declining in health and size due to old age
(V) Veteran – a tree in the second or mature stage of its life and has important wildlife and habitat features including; hollowing or associated decay fungi, holes, wounds and large dead branches.
(A) Ancient – a tree in the ancient or third and final stage of their life that is of interest biologically, aesthetically or culturally because of its age, size and condition

Physiological Condition
GOOD – a tree in a healthy condition with no significant problems
FAIR – a tree generally in good health with some problems that can be remediated
POOR – a tree in poor health with significant problems that cannot be remediated
DEAD – a tree without sufficient live material to sustain life

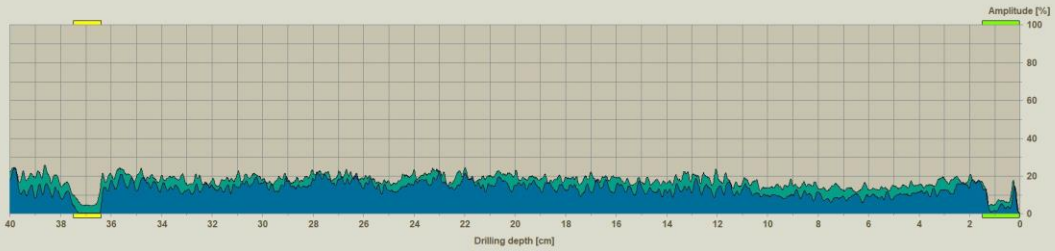
Structural Condition
An assessment of the structural/safe condition of the tree categorised into:
GOOD – a tree in a safe condition with no significant defects
FAIR – a tree in a safe condition at present but with defects or with significant defects that can be remediated
POOR – a tree with significant defects that cannot be remediated

Appendix 2

ARTEMIS TREE SERVICES

Measuring / object data

Measurement no.	12	Speed	2500 r/min	Diameter	130,00 cm
ID number	T4	Needle state	---	Level	0.1m
Drilling depth	40,12 cm	Tilt	---	Direction	N
Date	28.11.2024	Offset	106 / 289	Species	Oak
Time	13:02:48	Avg. curve	off / off	Location	Falcon Close
Feed	100 cm/min			Name	



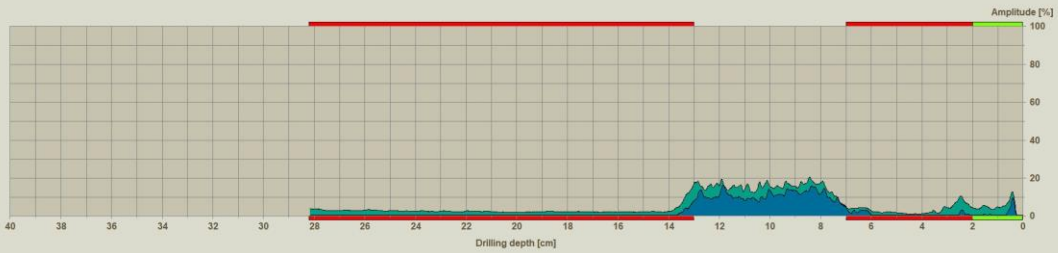
Assessment

From	0,00 cm	to	1,50 cm	Bark/Cambium Layer
From	36,40 cm	to	37,50 cm	Decay

Comment

Measuring / object data

Measurement no.	13	Speed	2500 r/min	Diameter	130,00 cm
ID number	T4	Needle state	---	Level	0.1m
Drilling depth	28,16 cm	Tilt	---	Direction	NE
Date	28.11.2024	Offset	103 / 283	Species	Oak
Time	13:06:04	Avg. curve	off / off	Location	Falcon Close
Feed	100 cm/min			Name	



Assessment

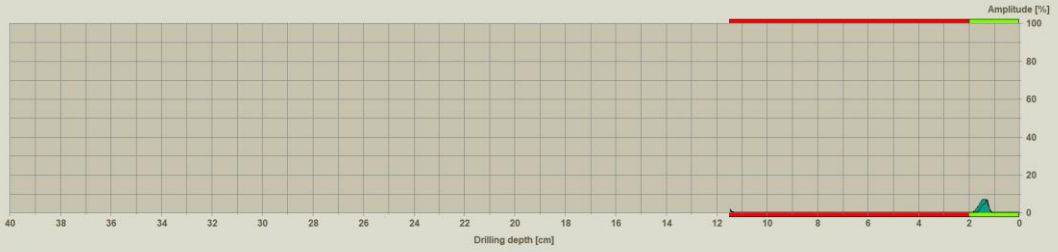
From	0,00 cm	to	2,00 cm	Bark/Cambium Layer
From	2,00 cm	to	7,00 cm	Cavity
From	13,00 cm	to	28,20 cm	Cavity

Comment

Measurement taken adjacent to fungal fruiting body. Automatic retraction of drill from 28.2cm due to cavity formation.

Measuring / object data

Measurement no.	14	Speed	2500 r/min	Diameter	130,00 cm
ID number	T4	Needle state	---	Level	0.1m
Drilling depth	11,47 cm	Tilt	---	Direction	E
Date	28.11.2024	Offset	100 / 279	Species	Oak
Time	13:08:20	Avg. curve	off / off	Location	Falcon Close
Feed	100 cm/min			Name	



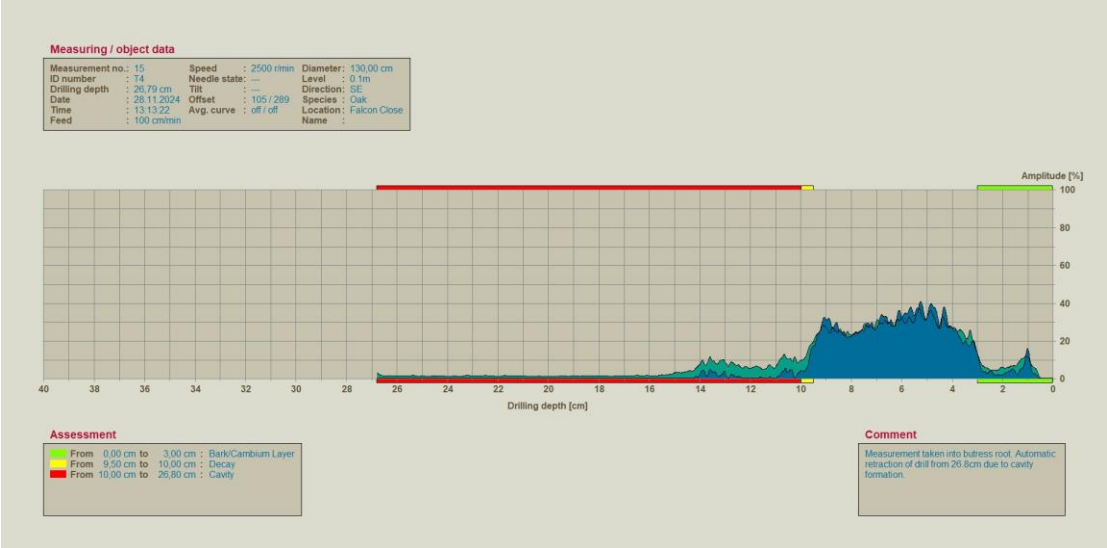
Assessment

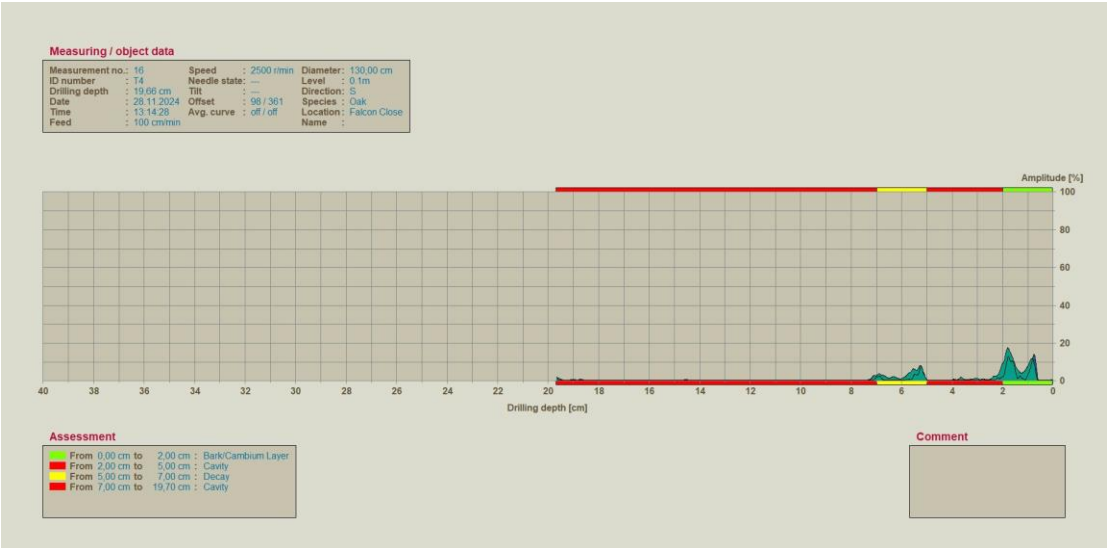
From	0,00 cm	to	2,00 cm	Bark/Cambium Layer
From	2,00 cm	to	11,50 cm	Cavity

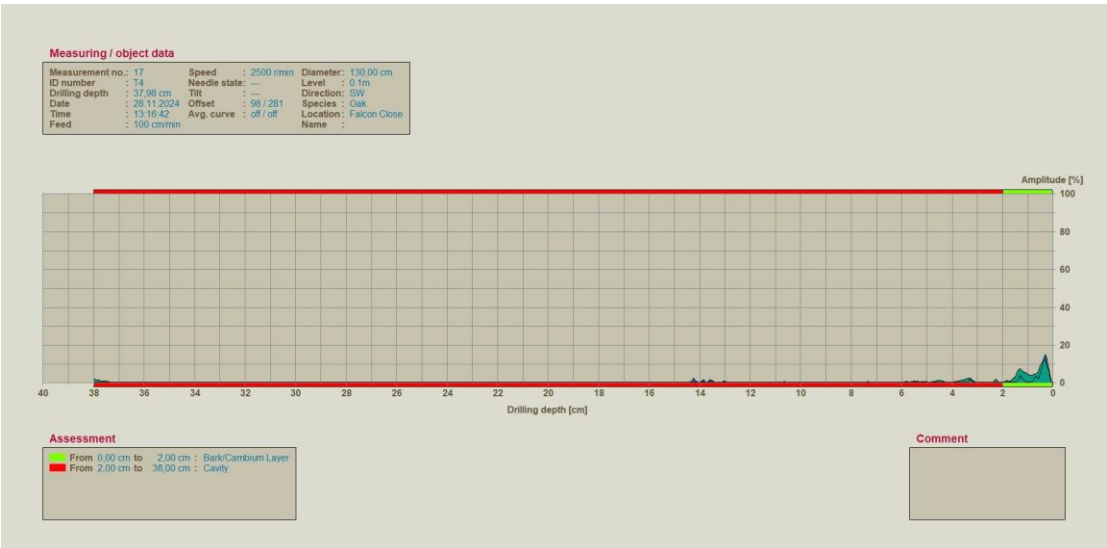
Comment

Taken adjacent to senescent fungal fruiting body.

Appendix 2

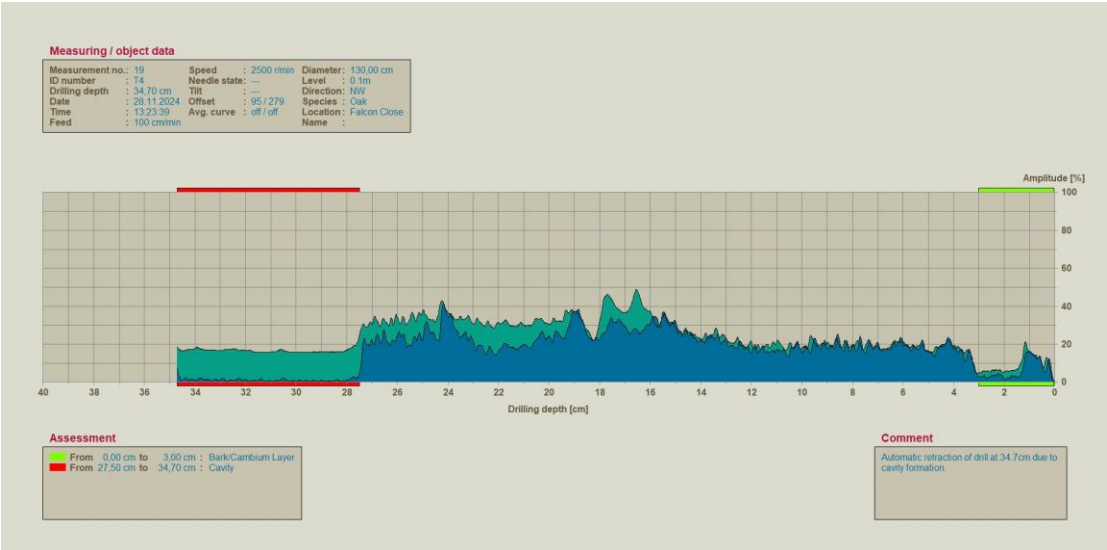

Measuring / object data
Measurement no.: 15
ID number : T4
Drilling depth : 26,79 cm
Date : 28.11.2024
Time : 13:13:22
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 105 / 289
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.1m
Direction: SE
Species : Oak
Location : Falcon Close
Name :
Amplitude [%]
Drilling depth [cm]
Assessment
From 0,00 cm to 3,00 cm : Bark/Cambium Layer
From 9,50 cm to 10,00 cm : Decay
From 10,00 cm to 26,80 cm : Cavity
Comment
Measurement taken into butress root. Automatic retraction of drill from 26.8cm due to cavity formation.

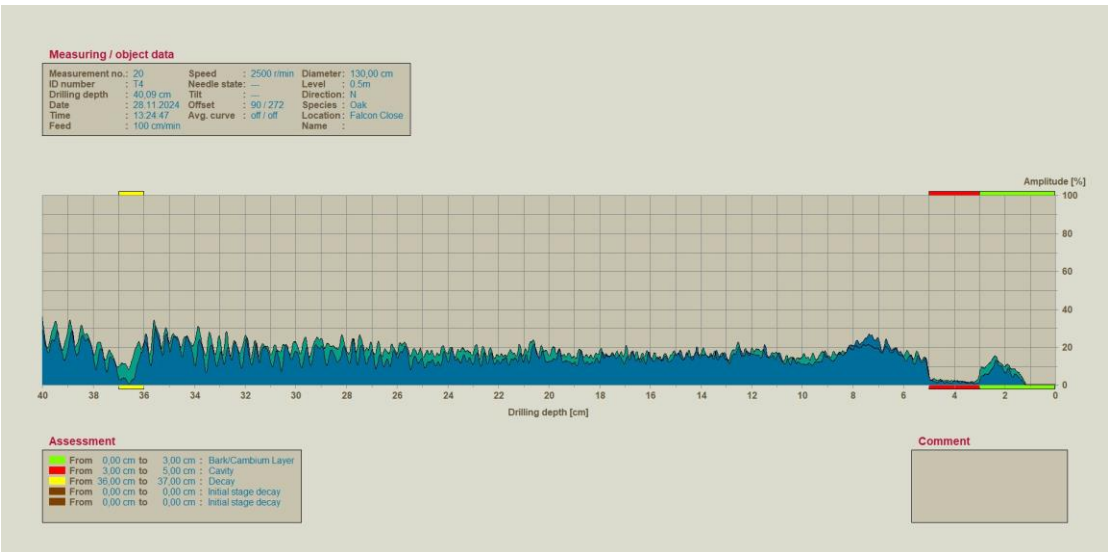

Measuring / object data
Measurement no.: 16
ID number : T4
Drilling depth : 19,66 cm
Date : 28.11.2024
Time : 13:14:28
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 98 / 361
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.1m
Direction: S
Species : Oak
Location : Falcon Close
Name :
Amplitude [%]
Drilling depth [cm]
Assessment
From 0,00 cm to 2,00 cm : Bark/Cambium Layer
From 2,00 cm to 5,00 cm : Cavity
From 5,00 cm to 7,00 cm : Decay
From 7,00 cm to 19,70 cm : Cavity
Comment


Measuring / object data
Measurement no.: 17
ID number : T4
Drilling depth : 37,98 cm
Date : 28.11.2024
Time : 13:15:42
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 98 / 281
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.1m
Direction: SW
Species : Oak
Location : Falcon Close
Name :
Amplitude [%]
Drilling depth [cm]
Assessment
From 0,00 cm to 2,00 cm : Bark/Cambium Layer
From 2,00 cm to 38,00 cm : Cavity
Comment

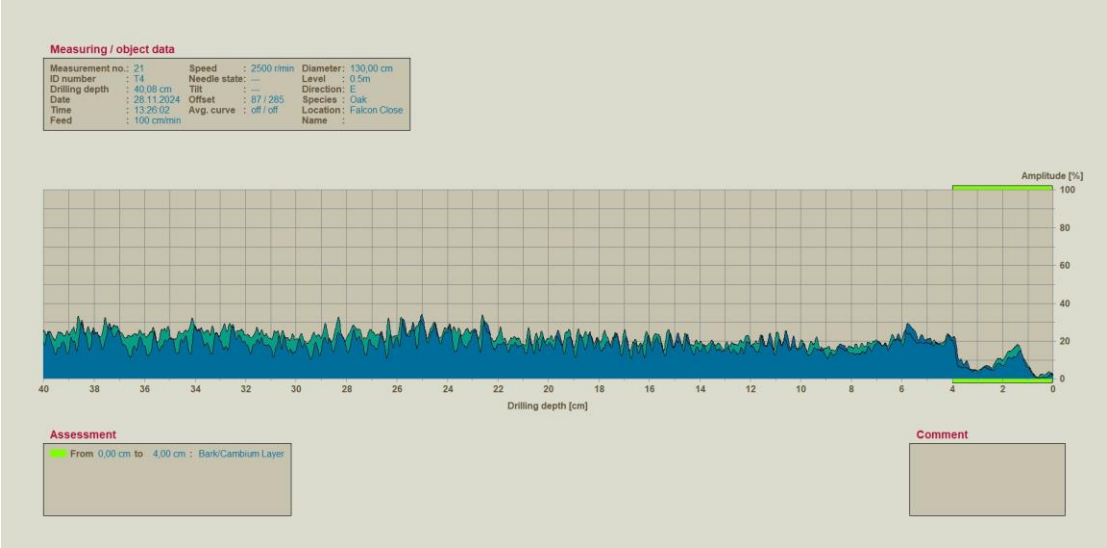
Appendix 2

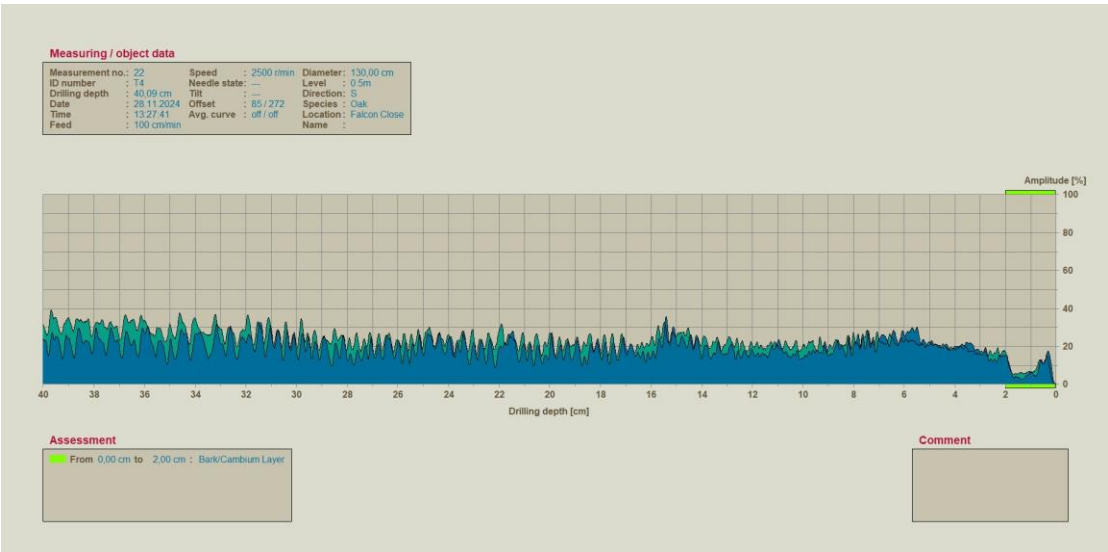

Measuring / object data
Measurement no.: 18
ID number : T4 0.1m SSW
Drilling depth : 40,11 cm
Date : 28.11.2024
Time : 13:18:03
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 90 / 277
Avg. curve : off / off
Diameter: 130,00 cm
Level :
Direction:
Species : Oak
Location: Falcon Close
Name :
Amplitude [%]
Drilling depth [cm]
Assessment
From 0,00 cm to 3,00 cm : Bark/Cambium Layer
From 38,50 cm to 40,00 cm : Decay
Comment
Measurement taken into buttress root

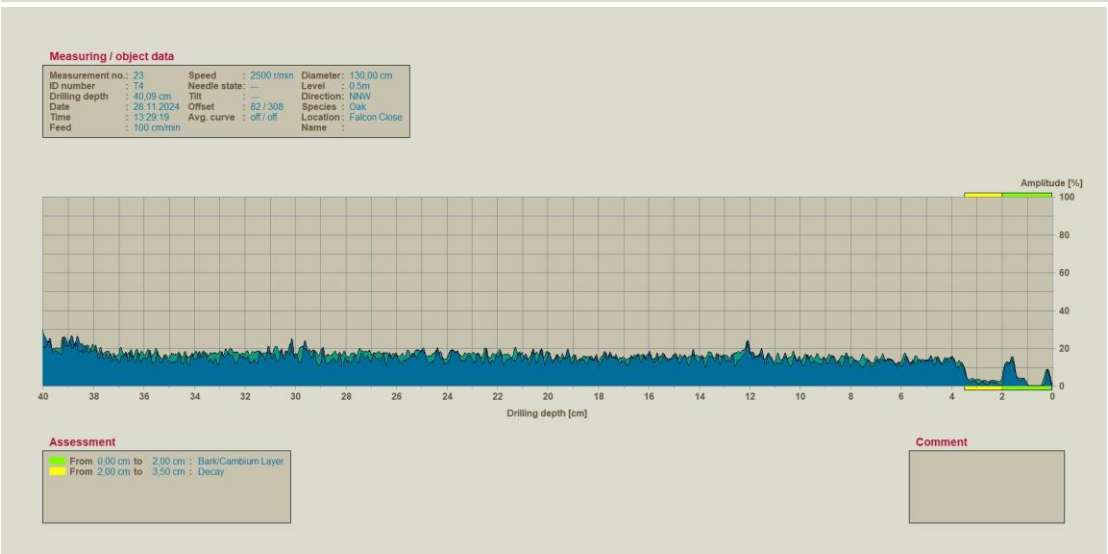

Measuring / object data
Measurement no.: 19
ID number : T4
Drilling depth : 34,70 cm
Date : 28.11.2024
Time : 13:23:39
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 95 / 279
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.1m
Direction: NW
Species : Oak
Location: Falcon Close
Name :
Amplitude [%]
Drilling depth [cm]
Assessment
From 0,00 cm to 3,00 cm : Bark/Cambium Layer
From 27,50 cm to 34,70 cm : Cavity
Comment
Automatic retraction of drill at 34.7cm due to cavity formation.


Measuring / object data
Measurement no.: 20
ID number : T4
Drilling depth : 40,09 cm
Date : 28.11.2024
Time : 13:24:47
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 90 / 272
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.5m
Direction: N
Species : Oak
Location: Falcon Close
Name :
Amplitude [%]
Drilling depth [cm]
Assessment
From 0,00 cm to 3,00 cm : Bark/Cambium Layer
From 3,00 cm to 5,00 cm : Cavity
From 36,00 cm to 37,00 cm : Decay
From 0,00 cm to 0,00 cm : Initial stage decay
From 0,00 cm to 0,00 cm : Initial stage decay
Comment

Appendix 2


Measuring / object data
Measurement no.: 21
ID number : T4
Drilling depth : 40,08 cm
Date : 28.11.2024
Time : 13:26:02
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 87 / 285
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.5m
Direction: E
Species : Oak
Location : Falcon Close
Name :
Amplitude [%]
100
80
60
40
20
0
40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Drilling depth [cm]
Assessment
From 0,00 cm to 4,00 cm : Bark/Cambium Layer
Comment


Measuring / object data
Measurement no.: 22
ID number : T4
Drilling depth : 40,09 cm
Date : 28.11.2024
Time : 13:27:41
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 85 / 272
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.5m
Direction: S
Species : Oak
Location : Falcon Close
Name :
Amplitude [%]
100
80
60
40
20
0
40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Drilling depth [cm]
Assessment
From 0,00 cm to 2,00 cm : Bark/Cambium Layer
Comment


Measuring / object data
Measurement no.: 23
ID number : T4
Drilling depth : 40,09 cm
Date : 28.11.2024
Time : 13:29:19
Feed : 100 cm/min
Speed : 2500 r/min
Needle state: ---
Tilt : ---
Offset : 82 / 308
Avg. curve : off / off
Diameter: 130,00 cm
Level : 0.5m
Direction: NNW
Species : Oak
Location : Falcon Close
Name :
Amplitude [%]
100
80
60
40
20
0
40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Drilling depth [cm]
Assessment
From 0,00 cm to 2,00 cm : Bark/Cambium Layer
From 2,00 cm to 3,50 cm : Decay
Comment

Appendix 3

Document record

Document	Editor	Date
DD-32865	Oliver Coleman	03/12/2024