

Simon Pryce Arboriculture

Report

Client: Greenmantle Ltd

Site: 251 Kidderpore Avenue, London, NW3 7AS

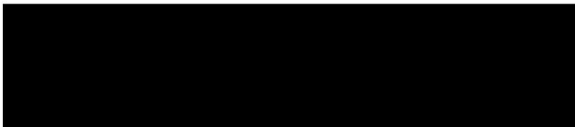
Subject: Safety assessment of ash tree

Inspection date: 9 April 2021

Report date: 3 May 2021

Reference: 21/009

Author: Simon Pryce, BSc, FArborA, RCarborA, CBiol, MICFor



I Introduction

- 1.1 This report has been prepared for Greenmantle Limited.
- 1.2 I have been asked to inspect a mature ash tree growing behind 25a Kidderpore Avenue, following concerns about its structural condition and safety.

Inspection

- 1.3 The tree was inspected on the morning of 9 April 2021, the weather was dry with little wind.
- 1.4 The tree was initially inspected visually from ground level with particular attention to the base where there are two cavity openings in opposite sites, a fungal bracket and a narrow fork between the two trunks.
- 1.5 The cavities were inspected with a steel probe and an endoscope.
- 1.6 The trees were test drilled with an IML PD microdrill, a purpose built instrument that measures and plots the resistance to a small diameter drilling needle, giving an accurate picture of the tree's internal condition. The annotated readings for each tree are attached and discussed below.

2 Visual inspection

- 2.1 The tree is a mature ash growing behind the houses on the south side of Kidderpore Avenue near the east corner of Caulfield House and is a mature specimen approximately 20m high. It has a single trunk which is oval in cross section with an average diameter of 1170mm that divides at about 1/2m into two main trunks 830 and 560mm in diameter. The smaller one is on the north side and the larger one to the south. The junction between these is narrow and the bark is ingrown, and in one place the bark round an opening has been gnawed by squirrels. It is possible that the tree originated as two shoots from a cut stump, which is common in ash trees although the oval cross section at the base could be due to them being two separate trees that germinated close together.
- 2.2 The branch structure shows that the tree has been crown reduced several years ago, but regrowth is intermittent and some branch ends appear not to have sprouted, which is uncommon in healthy ashes. There is some sizeable dead wood in the crown and the twig growth is sparse in places, suggesting poor health, although inspection in summer would give a clearer indication of its physiological condition. There are also some old pruning cuts with visible decay.
- 2.3 There are decay cavity openings at ground level on the north and south sides of the tree, i.e. one in each of the two trunks, shown in photographs 1 - 3. Investigation of both with a blunt steel probe and endoscope did not find any connection between the two cavities.
 - 1. The opening in the base of the S trunk is about 100mm across by 50mm high but leads into a cavity that is extensive, although it is irregular in shape with there is some quite hard material. Next to the opening there was a small bracket of one of the *Ganoderma* fungi, probably *G.australe*, which grows on a wide range of broadleaved trees and can cause significant decay.
 - 2. The opening in N trunk is larger and possibly older, as there is callus growth round the edges. This cavity also has some sections of harder material making it irregular in shape and the endoscope revealed black fungal growth on one of the walls, which looks like *Kretzschmaria deusta*. This grows on a range of trees, particularly beech and lime, and causes a brittle decay that can lead to sudden failures.

3 Test drilling

- 3.1 The tree was test drilled in 15 places in order to obtain a clear picture of its condition. The readings are attached and discussed below. The instrument takes separate readings of the drag on the rotating drill (drilling curve) shown as a single black line, and the linear resistance to penetration (feed curve), shown as a filled blue line. Of these the feed curve is more important as it measures any decay directly. The drill is flexible and, if it encounters a large cavity it can be damaged or change direction when it gets to sound wood at the far side of the cavity. In order to avoid that it stops and retracts automatically once it reaches the far side.
- 3.2 The tree's base has a complex structure, which is why it took a large number of readings to obtain a reasonably clear picture. In some places sound wood was found for the full 500mm depth of the drill, but in most cases there was extensive decay in the bases of both trunks. The decayed areas appear to be separate and are being colonised by different fungi, which is consistent with the other observations and tends to confirm that the tree has formed from two individuals. There is little or no connection between the two sides, so in structural terms it is a pair of very one sided individual trees, each with severe decay at the base.

4 Discussion and recommendations

- 4.1 The tree was not in leaf when inspected, but there is extensive dead wood in the crown, some of it quite large and it has not responded well to earlier pruning. There were no conclusive signs of ash die-back, partly due to the time of year it was inspected, but it is clearly in decline.
- 4.2 The visual inspection found extensive decay in the base of each of the main trunks. Test drilling found some sound wood, but the decay in the bases of both trunks is extensive and angling the drill down confirmed that this is worse below ground. The tree has compartmentalised the decay in a few places, mainly in the N trunk, but this is not sufficient to compensate for the strength loss and the tree's ability to continue resisting the decay will reduce as it declines.

Recommendation

- 4.3 The tree's size and location are such that any failure would cause major damage. It is beyond any practical remedial work and the only viable option is to fell it. It could be reduced to a standing, stump but would need to be cut low, as the decay is at the base and below ground and likely to spread faster once it dies after being topped.
- 4.4 The site is in Camden's Redington Frogna Conservation area, so their consent would normally be needed for any work, but this tree's condition is such that it can be removed under the provisions for dealing with dangerous trees.

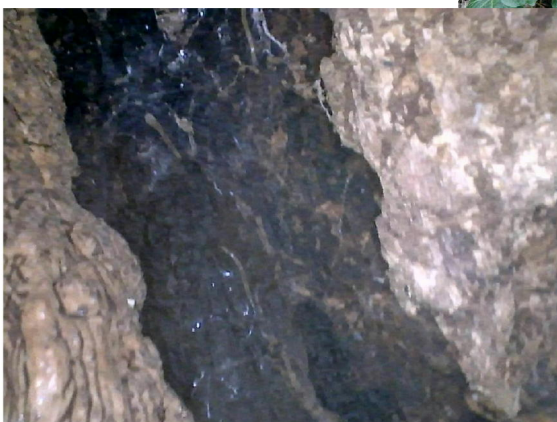
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Photographs



1) Cavity opening at the base of the larger S trunk with *Ganoderma* bracket by the opening

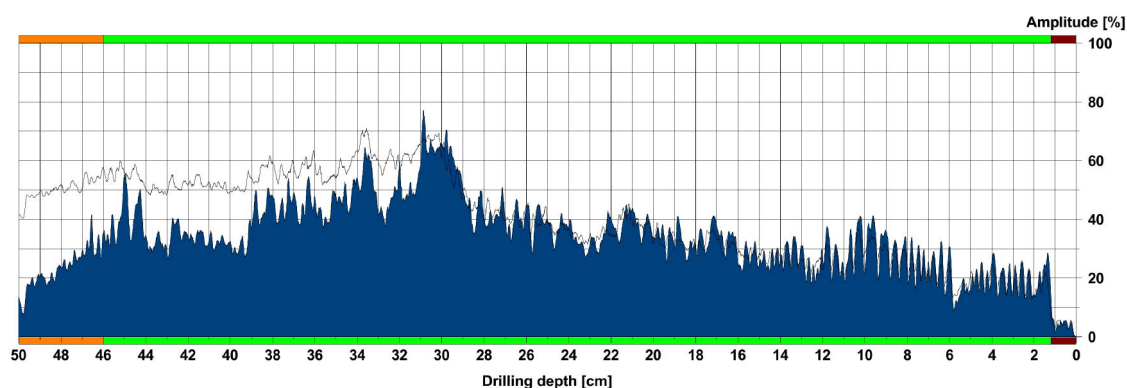
2) Cavity in the base of the smaller N trunk



3) Endoscope image of black fungal growth inside N cavity.

Measuring / object data

Measurement no. :	1	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	—	Level :	20,0 cm
Drilling depth :	50,36 cm	Tilt :	-8°	Direction :	N
Date :	09.04.2021	Offset :	99/277	Species :	Ash
Time :	10:03:51	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

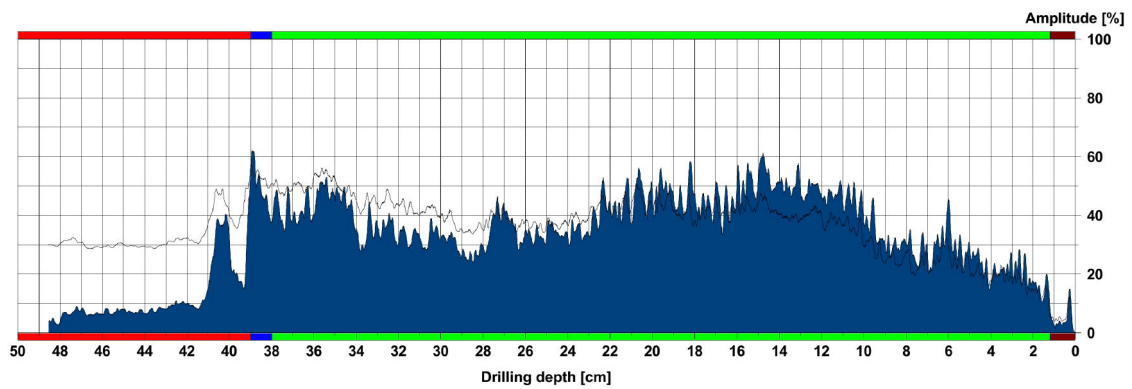
From 0,0 cm to 1,2 cm :	Bark
From 1,2 cm to 46,0 cm :	Sound wood
From 46,0 cm to 50,0 cm :	Incipient decay
From 0,0 cm to 0,0 cm :	
From 0,0 cm to 0,0 cm :	
From 0,0 cm to 0,0 cm :	

Comment

N trunk R of cavity. Clear serrated pattern is the grain texture of sound wood but resistance drops towards the end indicating basal decay advancing up the trunk.

Measuring / object data

Measurement no. :	2	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	—	Level :	5,0 cm
Drilling depth :	48,54 cm	Tilt :	-7°	Direction :	N
Date :	09.04.2021	Offset :	93/273	Species :	Ash
Time :	10:06:30	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

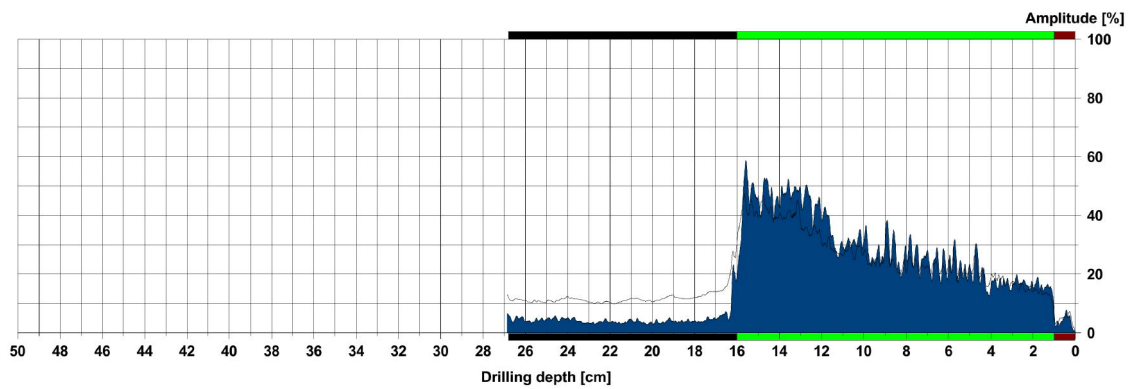
	From	0,0 cm	to	1,2 cm	:	Bark
	From	1,2 cm	to	38,0 cm	:	Sound wood
	From	38,0 cm	to	39,0 cm	:	Reaction zone
	From	39,0 cm	to	50,0 cm	:	Decay
	From	0,0 cm	to	0,0 cm	:	
	From	0,0 cm	to	0,0 cm	:	

Comment

N trunk, low. Sound wood then abrupt drop in resistance. Sudden transition with slight increase in resistance before indicates that the tree has compartmentalised to resist the decay.

Measuring / object data

Measurement no. :	4	Needle speed :	2500 r/min	Diameter :	117.0 cm
ID number :	21/009	Needle state :	---	Level :	10.0 cm
Drilling depth :	26.86 cm	Tilt :	-23°	Direction :	NE
Date :	09.04.2021	Offset :	80/256	Species :	Ash
Time :	10:09:08	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

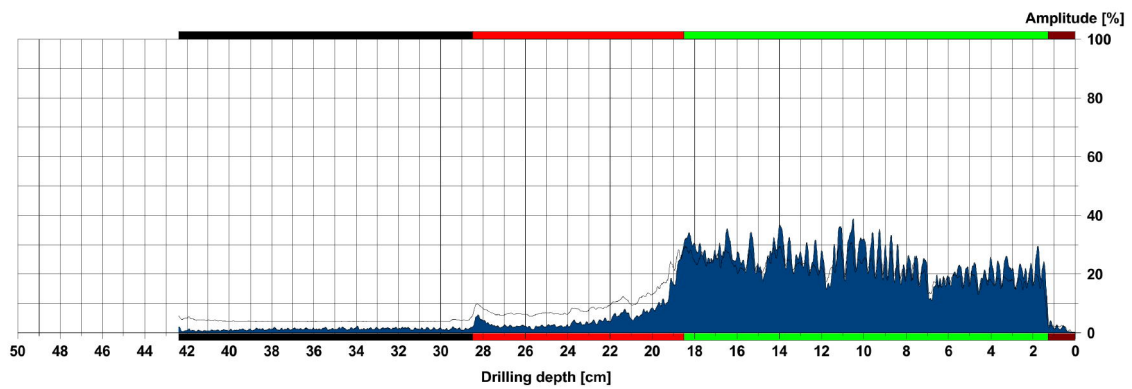
	From	0,0 cm	to	1,0 cm	: Bark
	From	1,0 cm	to	16,0 cm	: Sound wood
	From	16,0 cm	to	26,8 cm	: Cavity
	From	0,0 cm	to	0,0 cm	:
	From	0,0 cm	to	0,0 cm	:
	From	0,0 cm	to	0,0 cm	:

Comment

N trunk between cavity opening and fork. Thin shell of sound wood then the drill auto stopped in the cavity. Sharp transition indicates that the tree had compartmentalised at some stage
(reading 3 aborted due to error)

Measuring / object data

Measurement no. :	5	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	---	Level :	5,0 cm
Drilling depth :	42,40 cm	Tilt :	-16°	Direction :	W
Date :	09.04.2021	Offset :	81/251	Species :	Ash
Time :	10:10:19	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

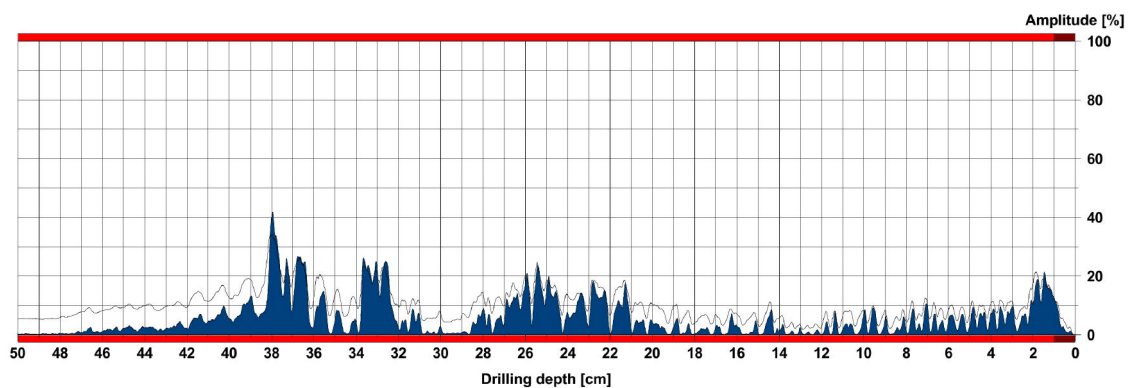
From 0,0 cm to 1,3 cm :	Bark
From 1,3 cm to 18,5 cm :	Sound wood
From 18,5 cm to 28,5 cm :	Decay
From 28,5 cm to 42,4 cm :	Cavity
From 0,0 cm to 0,0 cm :	
From 0,0 cm to 0,0 cm :	

Comment

S trunk, from W. Shell of sound wood over cavity. More gradual transition indicates that the tree has not compartmentalised successfully. Auto stop in cavity at 42.4cm

Measuring / object data

Measurement no. :	6	Needle speed :	2500 r/min	Diameter :	117.0 cm
ID number :	21/009	Needle state :	—	Level :	10.0 cm
Drilling depth :	50.34 cm	Tilt :	-20°	Direction :	SE
Date :	09.04.2021	Offset :	85/248	Species :	Ash
Time :	10:13:24	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

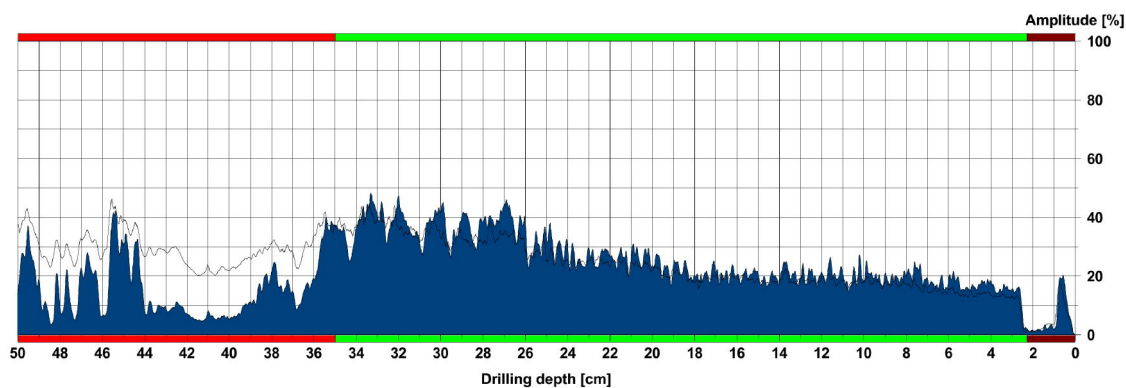
■	From 0,0 cm to 1,0 cm :	Bark
■	From 1,0 cm to 50,0 cm :	Decay
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	

Comment

S trunk just above Ganoderma bracket. Severe decay for the entire depth. Just enough resistance for the drill not to stop automatically.

Measuring / object data

Measurement no. :	7	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	—	Level :	5,0 cm
Drilling depth :	50,34 cm	Tilt :	-12°	Direction :	SW
Date :	09.04.2021	Offset :	84/244	Species :	Ash
Time :	10:14:41	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min	Name :	Greenmantle		



Assessment

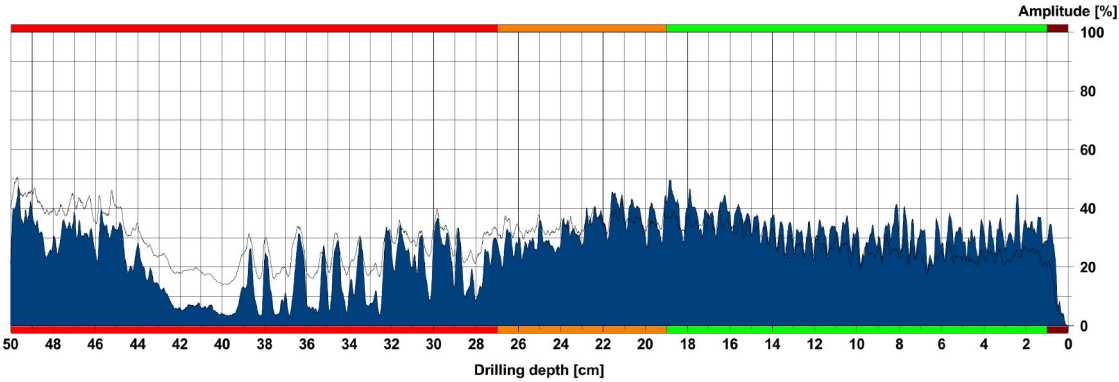
From	0,0 cm	to	2,3 cm	: Bark
From	2,3 cm	to	35,0 cm	: Sound wood
From	35,0 cm	to	50,0 cm	: Decay
From	0,0 cm	to	0,0 cm	:
From	0,0 cm	to	0,0 cm	:
From	0,0 cm	to	0,0 cm	:

Comment

S trunk from SW. Sound wood running into decay from 35cm

Measuring / object data

Measurement no.	: 8	Needle speed	: 2500 r/min	Diameter	: 117,0 cm
ID number	: 21/009	Needle state	: —	Level	: 5,0 cm
Drilling depth	: 50,36 cm	Tilt	: -9°	Direction	: E
Date	: 09.04.2021	Offset	: 84/245	Species	: Ash
Time	: 10:15:54	Avg. curve	: off	Location	: 25a Kidderpore Ave
Feed speed	: 100 cm/min			Name	: Greenmantle



Assessment

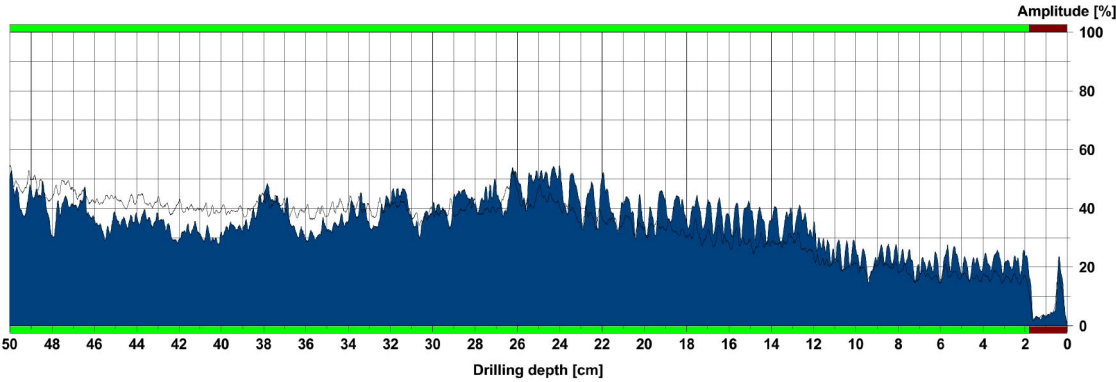
From 0,0 cm to 1,0 cm	: Bark
From 1,0 cm to 19,0 cm	: Sound wood
From 19,0 cm to 27,0 cm	: Incipient decay
From 27,0 cm to 50,0 cm	: Decay
From 0,0 cm to 0,0 cm	:
From 0,0 cm to 0,0 cm	:

Comment

S trunk, from E. Sound to approx 18cm, then deep troughs between thepaks indicate selective decay of the annual rings typical of some fungi including Ganoderma. Affected wood becomes soft and pliable

Measuring / object data

Measurement no. :	9	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	—	Level :	5,0 cm
Drilling depth :	50,37 cm	Tilt :	-17°	Direction :	E
Date :	09.04.2021	Offset :	79/246	Species :	Ash
Time :	10:17:27	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

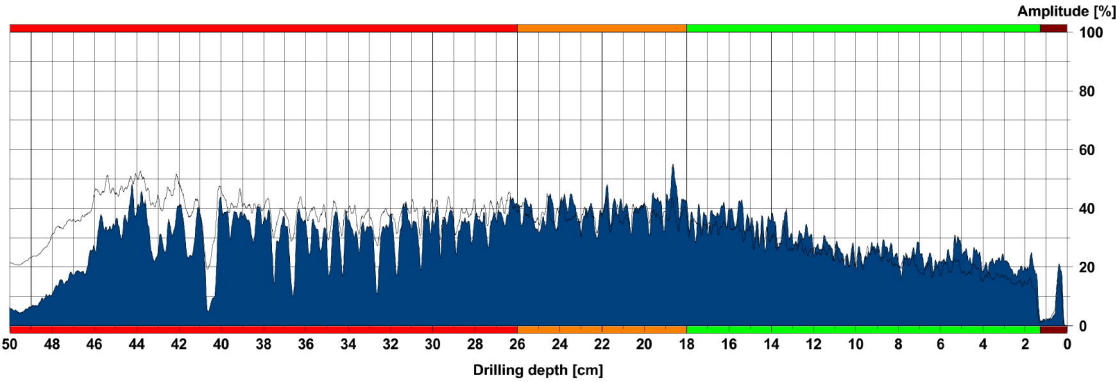
■	From 0,0 cm to 1,8 cm :	Bark
■	From 1,8 cm to 50,0 cm :	Sound wood
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	

Comment

S trunk near the fork. Appears sound for the full depth

Measuring / object data

Measurement no.	: 10	Needle speed	: 2500 r/min	Diameter	: 117,0 cm
ID number	: 21/009	Needle state	: —	Level	: 5,0 cm
Drilling depth	: 50,32 cm	Tilt	: -9°	Direction	: S
Date	: 09.04.2021	Offset	: 81/243	Species	: Ash
Time	: 10:18:53	Avg. curve	: off	Location	: 25a Kidderpore Ave
Feed speed	: 100 cm/min			Name	: Greenmantle



Assessment

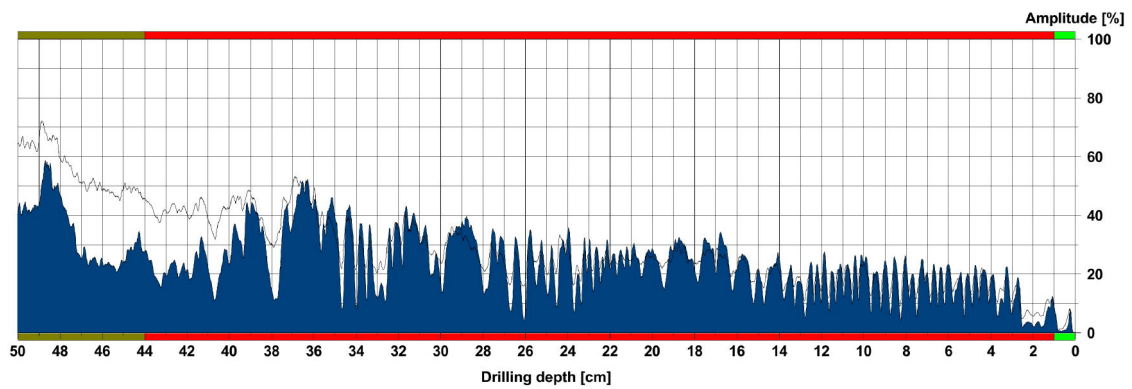
	From	0,0 cm	to	1,3 cm	: Bark
	From	1,3 cm	to	18,0 cm	: Sound wood
	From	18,0 cm	to	26,0 cm	: Incipient decay
	From	26,0 cm	to	50,0 cm	: Decay
	From	0,0 cm	to	0,0 cm	:
	From	0,0 cm	to	0,0 cm	:

Comment

S trunk L of the bracket and opening. Looks reasonable to about 18cm, after that the dips become progressively deeper

Measuring / object data

Measurement no. :	11	Needle speed :	2500 r/min	Diameter :	117.0 cm
ID number :	21/009	Needle state :	—	Level :	30.0 cm
Drilling depth :	50.36 cm	Tilt :	-8°	Direction :	SE
Date :	09.04.2021	Offset :	84/246	Species :	Ash
Time :	10:22:46	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

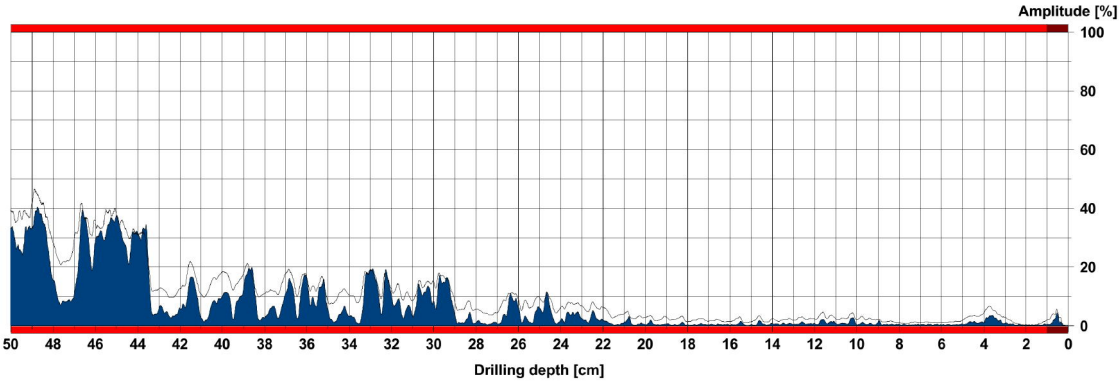
From	0,0 cm	to	1,0 cm	: Sound wood
From	1,0 cm	to	44,0 cm	: Decay
From	44,0 cm	to	50,0 cm	: Suspected decay
From	0,0 cm	to	0,0 cm	:
From	0,0 cm	to	0,0 cm	:
From	0,0 cm	to	0,0 cm	:

Comment

S trunk above bracket. Selective delignification for most of the depth. Possibly more sound after about 44cm.

Measuring / object data

Measurement no. :	12	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	---	Level :	
Drilling depth :	50,34 cm	Tilt :	-35°	Direction :	SE
Date :	09.04.2021	Offset :	76/248	Species :	Ash
Time :	10:25:06	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

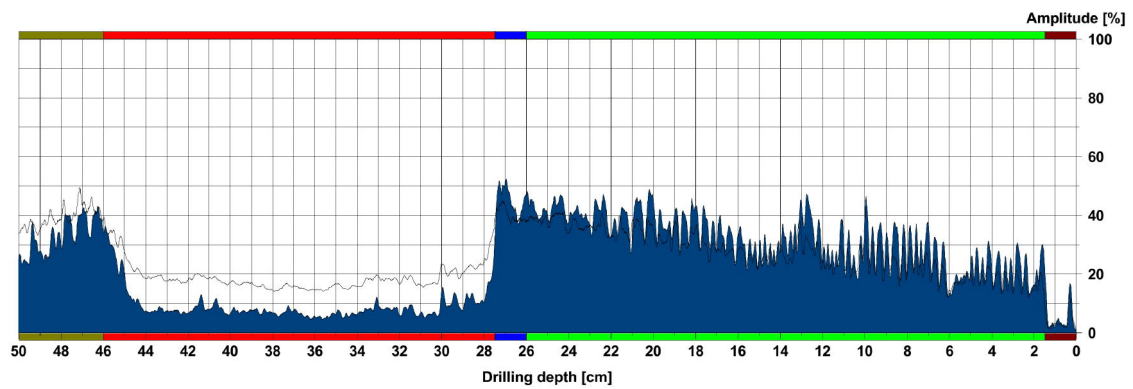
■	From 0,0 cm to 1,0 cm :	Bark
■	From 1,0 cm to 50,0 cm :	Decay
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	
□	From 0,0 cm to 0,0 cm :	

Comment

S trunk near bracket, angled down. Severe extensive decay just below ground, typical of many species including Ganoderma. Like 6 just enough material for the drill not to auto stop

Measuring / object data

Measurement no. : 13	Needle speed : 2500 r/min	Diameter : 117,0 cm
ID number : 21/009	Needle state : —	Level : 40,0 cm
Drilling depth : 50,37 cm	Tilt : -37°	Direction : N
Date : 09.04.2021	Offset : 81/369	Species : Ash
Time : 10:28:19	Avg. curve : off	Location : 25a Kidderpore Ave
Feed speed : 100 cm/min		Name : Greenmantle



Assessment

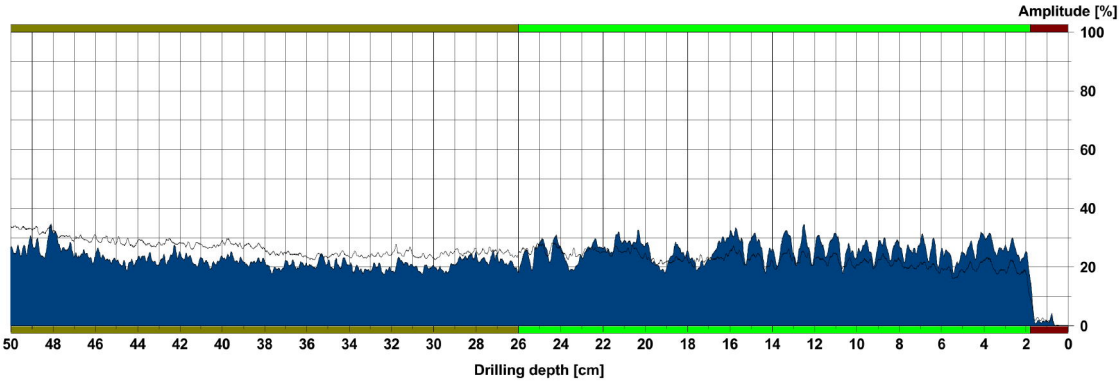
From 0,0 cm to 1,5 cm : Bark
From 1,5 cm to 26,0 cm : Sound wood
From 26,0 cm to 27,5 cm : Reaction zone
From 27,5 cm to 46,0 cm : Decay
From 46,0 cm to 50,0 cm : Suspected decay
From 0,0 cm to 0,0 cm :

Comment

N trunk angled down. Sound wood with distinct area of decay spreading up the trunk

Measuring / object data

Measurement no. :	14	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	---	Level :	5,0 cm
Drilling depth :	50,37 cm	Tilt :	-38°	Direction :	SW
Date :	09.04.2021	Offset :	77/248	Species :	Ash
Time :	10:29:59	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

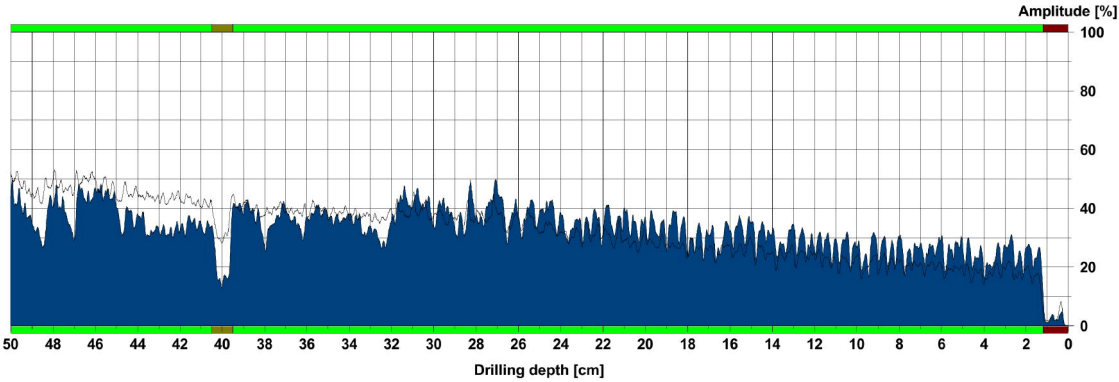
■	From	0,0 cm	to	1,8 cm	: Bark
■	From	1,8 cm	to	26,0 cm	: Sound wood
■	From	26,0 cm	to	50,0 cm	: Suspected decay
□	From	0,0 cm	to	0,0 cm	:
□	From	0,0 cm	to	0,0 cm	:
□	From	0,0 cm	to	0,0 cm	:

Comment

S trunk, from SW angled down. Some grain texture initially but not well defined, particularly after about 26cm Overall resistance low suggesting possible non-selective decay

Measuring / object data

Measurement no.	: 15	Needle speed	: 2500 r/min	Diameter	: 117,0 cm
ID number	: 21/009	Needle state	: —	Level	: 5,0 cm
Drilling depth	: 50,36 cm	Tilt	: 0°	Direction	: SW
Date	: 09.04.2021	Offset	: 86/240	Species	: Ash
Time	: 10:31:37	Avg. curve	: off	Location	: 25a Kidderpore Ave
Feed speed	: 100 cm/min			Name	: Greenmantle



Assessment

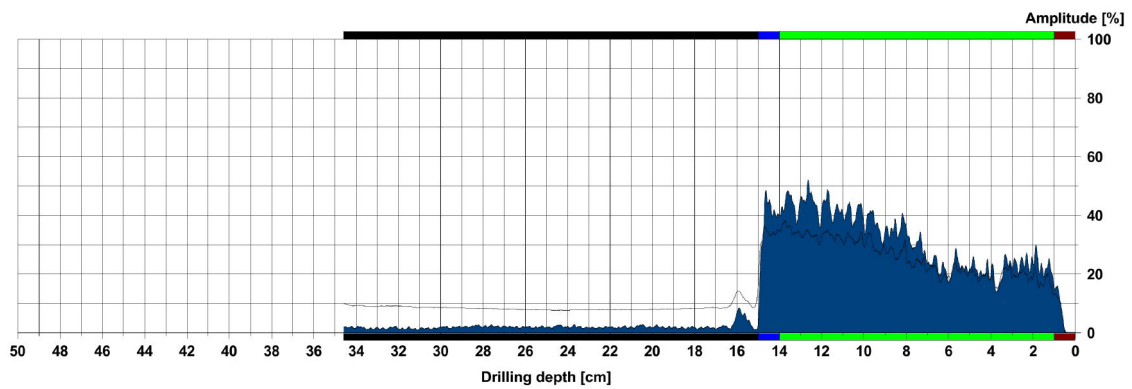
From 0,0 cm to 1,2 cm	: Bark
From 1,2 cm to 39,5 cm	: Sound wood
From 39,5 cm to 40,5 cm	: Suspected decay
From 40,5 cm to 50,0 cm	: Sound wood
From 0,0 cm to 0,0 cm	:
From 0,0 cm to 0,0 cm	:

Comment

S trunk level. Well defined grain texture initially, less so from about 32cm and possible decay pocket at 40cm

Measuring / object data

Measurement no. :	16	Needle speed :	2500 r/min	Diameter :	117,0 cm
ID number :	21/009	Needle state :	—	Level :	5,0 cm
Drilling depth :	34,59 cm	Tilt :	-42°	Direction :	N
Date :	09.04.2021	Offset :	72/245	Species :	Ash
Time :	10:33:05	Avg. curve :	off	Location :	25a Kidderpore Ave
Feed speed :	100 cm/min			Name :	Greenmantle



Assessment

From 0,0 cm to 1,0 cm :	Bark
From 1,0 cm to 14,0 cm :	Sound wood
From 14,0 cm to 15,0 cm :	Reaction zone
From 15,0 cm to 34,6 cm :	Cavity
From 0,0 cm to 0,0 cm :	
From 0,0 cm to 0,0 cm :	

Comment

N trunk, R of cavity angled down.
Compartmentalised but the shell of sound wood is very narrow for the size of the tree. Auto stop in cavity