Simon Pryce Arboriculture

Report

Client:	**Mr P Green**
Site:	**58 Belsize Park Gardens, London, NW3 4ND**
Subject:	**Decay and safety assessment of ash tree in the back garden**
Inspection date:	**9 August 2023**
Report date:	**18 August 2023**
Reference:	**23/047**
Author:	**Simon Pryce, BSc, FArborA, RCArborA, CBiol, FICFor**

[redacted]

1 Introduction

1.1 This report has been prepared for Mr P Green of 58 Belsize Park Gardens, London, NW3 4ND.

1.2 I have been asked to inspect a mature ash tree growing in the back garden, to assess its health and structural condition and to recommend any necessary or appropriate work. This has been prompted by the appearance on the trunk of a bracket of the decay fungus *Inonotus hispidus* (shaggy bracket).

2 Background

Previous inspection

2.1 On 25 November 2020 I inspected a mature ash tree growing in front of the house, my report reference 20/098 and test drilling revealed severe decay, so it was felled for safety. In that report the tree at the front was tree 2, while the tree at the rear was tree 1. Tree 1 was also inspected visually at the same time, but that did not reveal any significant problems and it had been crown reduced a few years before so no work was recommended at the time.

3 Observations

3.1 The tree is growing among dense shrubs next to the left hand side of the back garden and is a mature specimen approximately 21m high, with a single trunk about 700mm in diameter that has a slight lean away from the house and divides at about 5m into several large limbs that form the main framework of the crown. This appears to be the result of it being topped or pollarded when younger but the cuts have occluded fully and there are no signs of any decay or structural weakness.

3.2 The main limbs are upright, the crown is reasonably symmetrical and there are no signs of movement in the ground round the tree's base, which indicates that the leaning trunk developed early in its life and growth since then been upright. At the time there were no signs of fungal growth or decay at the tree's base.

3.3 When inspected in November 2020 the tree had retained some leaves and was carrying a heavy crop of seeds, which can be signs of ash die-back. That can be serious, although older trees are less susceptible and this not conclusive at the time. When reinspected for this report the tree was regrowing vigorously after the recent reduction, with dense healthy foliage growing from the pruning points in the crown and where small shoots on the trunk had been cut.

3.4 Older ash trees are commonly affected by *Inonotus hispidus*, which weakens limbs and forms distinctive brackets that develop in summer and are shed in autumn, leaving dark marks. Close inspection in 2020 and on this occasion did not reveal any evidence of this in the crown or main limbs.

3.5 However this summer a bracket of *I.hispidus* appeared near the top of a wound on the lower trunk. The wound is relatively shallow, possibly caused by some kind of impact and has concentric bands of callus round the edges, which is common in trees affected by this fungus.

Inonotus hispidus bracket circled, near the top of the old wound.

4 Test drilling

4.1 Access was restricted by the fence, but the tree was test drilled in eight places, mainly near the wound and bracket, using an IML PD microdrill. This is 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 are attached and discussed below.

4.2 The outside of the tree is at the right hand side of the charts, i.e. the drill runs from right to left. The instrument takes separate readings of the linear resistance to penetration (feed curve), shown as a filled blue line, and drag on the rotating drill (drilling curve) shown as a single black line. Of these the feed curve is more important as it measures any decay directly.

5 Discussion

Effects of the fungus

5.1 *Inonotus hispidus* is common on ash and occurs some other broadleaves, particularly London plane, apple and walnut. It affects these in different ways, depending on their ability to resist decay and restrict its spread. Ash timber is not naturally durable and its ability to compartmentalise and resist the spread of decay is poor compared with other species, particularly plane.

5.2 Wood has three main components. Cellulose, which is fibrous, providing flexibility and tensile strength, also found in non-woody plants. Woody plants also contain lignin, a complex polymer that, with hemicellulose, binds cellulose fibres, providing rigidity. This is like reinforced concrete, with lignin and hemicellulose as the concrete and cellulose as the steel reinforcing bars.

5.3 Most decay fungi are specialists. Brown rots decay cellulose and hemicellulose, leaving lignin, so the affected timber turns brown and rapidly becomes brittle or crumbly in the later stages. White rots consume lignin, leaving cellulose, making the timber paler and softer, but often keeping some flexibility. Soft rots decay cellulose preferentially but can also decay hemicellulose and lignin. *I.hispidus* can decay all the components at roughly equal rates, so affected timber loses compressive and tensile strength, resulting in brittle failures. That accounts for some of the readings showing the timber becoming softer, while retaining the grain texture.

5.4 Access with the drill was restricted, but the readings show that the decay has spread in from the wound, rather than hollowing the centre of the trunk like some other fungi. Owing to the lean the wound is on the tension side of the tree, but as the fungus reduces tensile and compressive strength that makes little difference.

5.5 Trees do not have immune systems so they cannot fight fungal infections, but they can compartmentalise timber in order to contain decay. However ash timber is not naturally durable and they do not have a strong ability to do this, as shown by the gradual transitions between sound wood and advancing decay. *I.hispidus* is known for weakening trees rapidly before the timber shows visible signs of decay. [1]

Management options

5.6 Given the tree's size and location any failure in the lower trunk would cause considerable damage. The crown reduction was done to a good standard and will have reduced weight and wind loads on the tree, but it would need to be recut regularly in order to maintain the benefit. That would give some safety margin, but the decay would continue to spread and the tree would grow back, so it would need intensive monitoring and management as long as it was retained. Camden's approval would be needed each time it was worked on.

5.7 Felling the tree or reducing it to a high stump would eliminate any risk and avoid the need for ongoing management. There would be some loss of amenity, but that would be mitigated by the much larger London plane at the end of the garden and the other trees in the wider area. For the longer term there would also be space to plant a new tree nearby.

Restrictions

5.8 The house is in Belsize Conservation Area, so Camden must be given six weeks notice (Section 211 notice) of any proposed tree work, giving them the opportunity to make a tree preservation order (TPO) to prevent any work they wish to prevent. In January 2021 City Tree Services sent in a six week notice to reduce the tree by 1.5 - 2m back to the former points but Camden issued a TPO consent notice. That is evidently an error, as in 2013 they issued a TPO consent for the tree to the front and a Section 211 notice for this tree in line with the available information.

[redacted]

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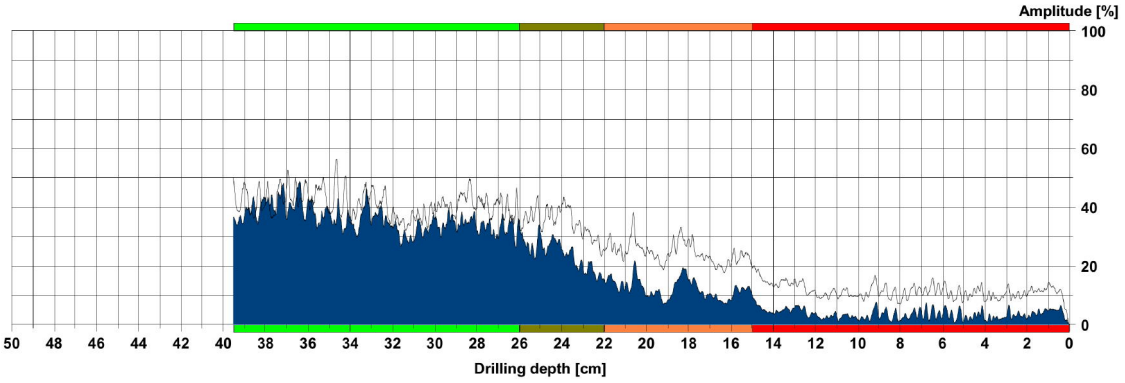
References

1) Lonsdale D (1998) Tree hazard assessment and management, Research for Amenity Trees no.7, HMSO, ISBN 0 11 753355 6

Measuring / object data

Measurement no.	: 1	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 210,0 cm
Drilling depth	: 39,52 cm	**Tilt**	: -6°	**Direction**	: SW
Date	: 09.08.2023	**Offset**	: 92/301	**Species**	: Ash
Time	: 11:00:32	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

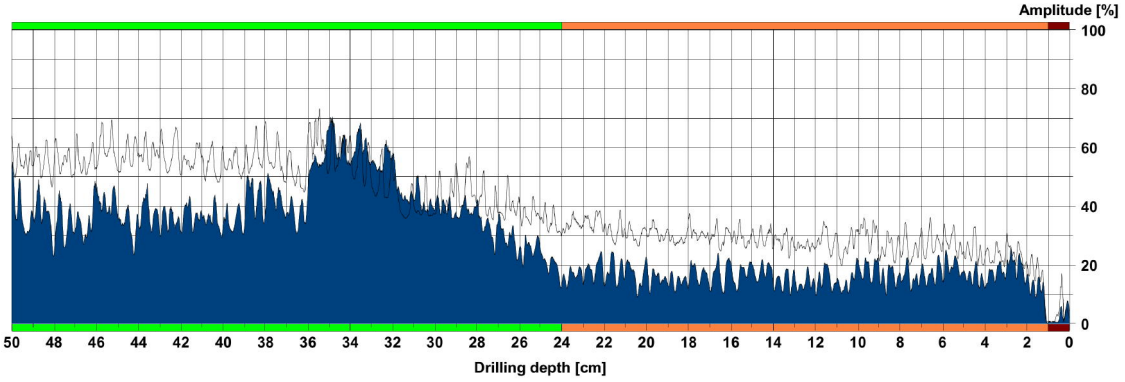
From	0,0 cm	**to**	15,0 cm	: Decay
From	15,0 cm	**to**	22,0 cm	: Early decay
From	22,0 cm	**to**	26,0 cm	: Suspected decay
From	26,0 cm	**to**	39,5 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:

Comment

SW side just below bracket. Significant decay grading into sound wood, which has higher resistance. Gradual transition indicates that the tree is not resisting the spread of decay at this point.

Measuring / object data

Measurement no.	: 2	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 200,0 cm
Drilling depth	: 50,35 cm	**Tilt**	: +2°	**Direction**	: S
Date	: 09.08.2023	**Offset**	: 86/381	**Species**	: Ash
Time	: 11:05:52	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

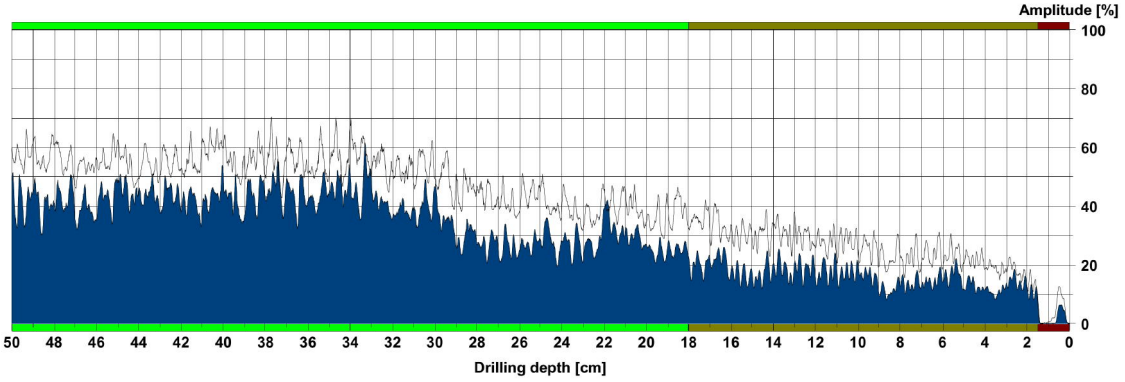
From	0,0 cm	**to**	1,0 cm	: Bark
From	1,0 cm	**to**	24,0 cm	: Early decay
From	24,0 cm	**to**	50,0 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:

Comment

South at 2m. Grain texture is well defined to about 24cm but resistsnce is low. Higher resistance at 30 - 36cm is possible reaction to an old injury.

Measuring / object data

Measurement no.	: 3	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 180,0 cm
Drilling depth	: 50,41 cm	**Tilt**	: -2°	**Direction**	: SW
Date	: 09.08.2023	**Offset**	: 82/627	**Species**	: Ash
Time	: 11:08:02	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

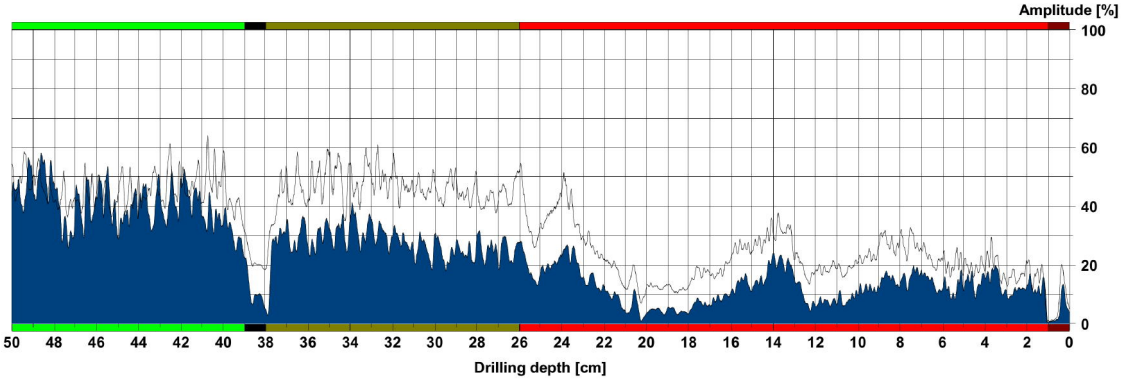
From	0,0 cm	**to**	1,5 cm	: Bark
From	1,5 cm	**to**	18,0 cm	: Suspected decay
From	18,0 cm	**to**	50,0 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:

Comment

Similar to reading 2, initial resistance is low, but transition to sound looking wood is less well defined.

Measuring / object data

Measurement no.	: 4	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 220,0 cm
Drilling depth	: 50,40 cm	**Tilt**	: -6°	**Direction**	: SW
Date	: 09.08.2023	**Offset**	: 75/609	**Species**	: Ash
Time	: 11:19:58	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

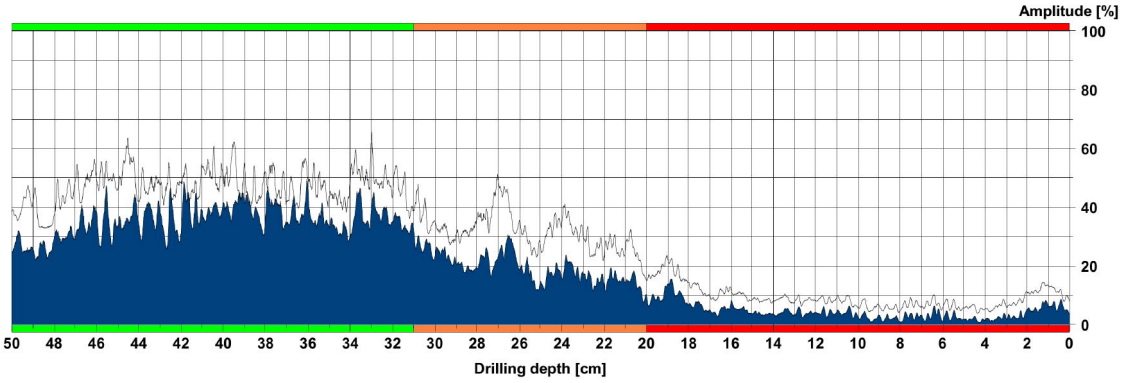
From	0,0 cm	**to**	1,0 cm	: Bark
From	1,0 cm	**to**	26,0 cm	: Decay
From	26,0 cm	**to**	38,0 cm	: Suspected decay
From	38,0 cm	**to**	39,0 cm	: Cavity
From	39,0 cm	**to**	50,0 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:

Comment

SW level with bracket. Decay in to at least 26cm and decay pocket or possible crack at 38cm.

Measuring / object data

Measurement no.	: 5	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 180,0 cm
Drilling depth	: 50,35 cm	**Tilt**	: -3°	**Direction**	: SW
Date	: 09.08.2023	**Offset**	: 78/576	**Species**	: Ash
Time	: 11:42:25	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

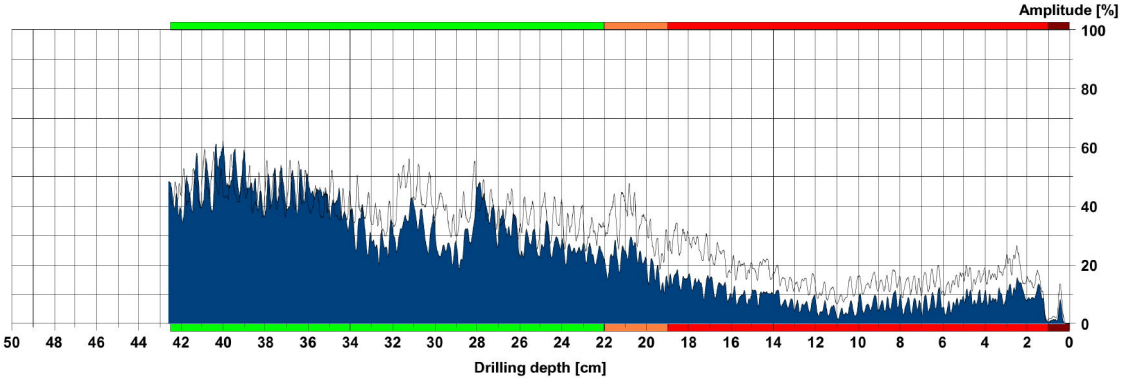
From	0,0 cm	**to**	20,0 cm	: Decay
From	20,0 cm	**to**	31,0 cm	: Early decay
From	31,0 cm	**to**	50,0 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:

Comment

1.8m at base of the wound below the bracket. Decay extensive and no clear transition to sound wood.

Measuring / object data

Measurement no.	: 6	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 150,0 cm
Drilling depth	: 42,59 cm	**Tilt**	: -7°	**Direction**	: SW
Date	: 09.08.2023	**Offset**	: 68/300	**Species**	: Ash
Time	: 11:44:41	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

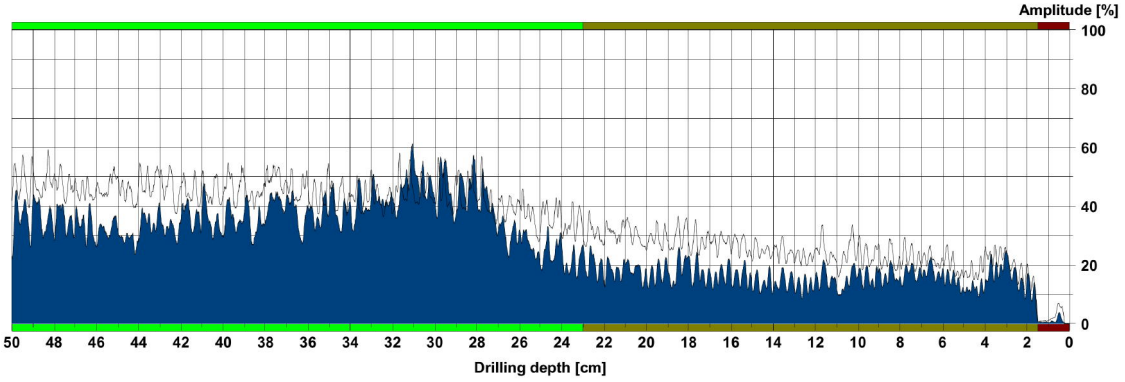
From	0,0 cm	**to**	1,0 cm	: Bark
From	1,0 cm	**to**	19,0 cm	: Decay
From	19,0 cm	**to**	22,0 cm	: Early decay
From	22,0 cm	**to**	42,5 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:

Comment

SW below the wound. Low resistance consistent with decay but some grain texture still evident.

Measuring / object data

Measurement no.	: 7	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 220,0 cm
Drilling depth	: 50,37 cm	**Tilt**	: 0°	**Direction**	: E
Date	: 09.08.2023	**Offset**	: 70/307	**Species**	: Ash
Time	: 11:54:05	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

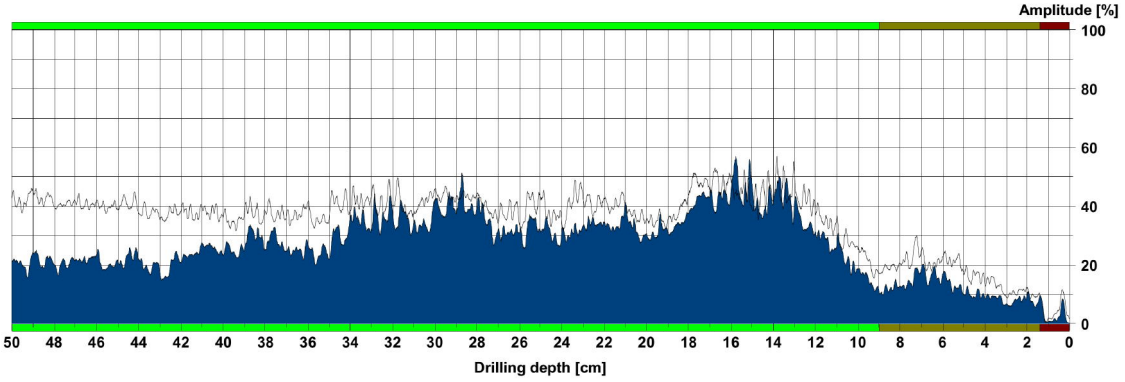
From	0,0 cm	**to**	1,5 cm	: Bark
From	1,5 cm	**to**	23,0 cm	: Suspected decay
From	23,0 cm	**to**	50,0 cm	: Sound wood
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:
From	0,0 cm	**to**	0,0 cm	:

Comment

E level with bracket. Similar to 2 and 3. Grain texture present but resistance low with no clear transition to sound wood

Measuring / object data

Measurement no.	: 8	**Needle speed**	: 2500 r/min	**Diameter**	: 70,0 cm
ID number	: 23/047	**Needle state**	: ---	**Level**	: 20,0 cm
Drilling depth	: 50,38 cm	**Tilt**	: -1°	**Direction**	: SW
Date	: 09.08.2023	**Offset**	: 68/387	**Species**	: Ash
Time	: 11:56:38	**Avg. curve**	: off	**Location**	: 58 Belsize Park gds
Feed speed	: 100 cm/min			**Name**	: Green



Assessment

From	0,0 cm	**to**	1,4 cm	: Bark
From	1,4 cm	**to**	9,0 cm	: Suspected decay
From	9,0 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	:

Comment

SW, control drill well below the wound. Resistance more variable than in the readings higher up the trunk and grain texture not as well defined after about 34cm, but no obvious signs of decay