Tree decay diagnostic inspection

Homehaven Court, Swiss Gardens, Shoreham-by-Sea BN43 5WH

Prepared by

Jonathan Rodwell Cert Arb L4(ABC); TechArborA

February 2023

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Appendix 1 - Beech (T33) – micro-drill resistance measurements

SUMMARY

- A diagnostic decay inspection of one tree was undertaken using a Resistograph® (IML-RESI PD-500) micro-drill;
- a brief report outlining management recommendations to mitigate risks based on interpretation of the micro-drill results was prepared.

Details

- Date of inspection - 26th January 2023
- Present at inspection - Jonathan Rodwell Cert Arb L4(ABC); TechArborA
- Date of report - 6th February 2023

Contact details

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References

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1.0 Introduction

1.1 I have received instruction from Linda Jones, Firstport Development Manager, to undertake further inspection of selected trees at Homehaven Court, Swiss Gardens, Shoreham-by-Sea BN43 5WH.

1.2 The purpose of the instruction was to:

- Undertake a diagnostic decay inspection of one tree identified during the annual review of the full tree survey/inspection.

2.0 Risk Assessment and Survey Limitations

2.1 Although the potential risk to someone passing beneath a tree when the tree, or part of it, fails is relatively remote the risk is present. The risk increases significantly in areas of regular or consistent use, such as gardens, footpaths and roads. Where static structures exist, the risks become constant and assessment is made as to whether total or partial failure of a tree could lead to damage of such structures.

2.2 Within the scope of any tree survey it is a fact that not all crown or stem failure can be covered, particularly in relation to extreme weather conditions when even healthy trees can suffer structural failure. There is also the potential for mature trees to occasionally shed large branches for no discernible reason, even on calm days. Although a relatively rare occurrence this should be acknowledged as a risk that cannot be entirely mitigated.

3.0 Method

3.1 A Resistograph® (IML-RESI PD-500) micro-drill was used to detect and assess the extent of internal decay. The microdrill measures the resistance of the wood to a depth of 500mm; a constant pressure is applied and reaction to both drill feed (compressive strength) and drill speed (torsional strength) measured, with recorded data shown as a digital graph.

4.0 Tree Details & Assessment Results

4.1 The drilling resistance measurements are shown as graphs at Appendix 1. Details of the trees inspected are noted below.

4.2

Tree No.	Species	Height	Stem Ø at 1.5m above ground level	Radial crown spread
T33	Beech	15m	80cm	6m



Tree viewed from north-west *(May 2022)* full crown with no significant deadwood or apical dieback.

4.3 ***Beech*** (T33):

- Fruiting bodies of the fungus *Ganoderma* sp. were present in between buttress roots to the north at the base of the trunk.
- The micro-drill measurements at ground level indicate there is a central core of advanced decay measuring around 60cm by 70cm.
- Sound wood surrounds the core of decay with residual walls remaining that are 14cm thick to the north and east, 18cm to the south and 21cm to the west.

5.0 Conclusions & Comment

5.1 Conclusions based on the visual tree assessment (VTA) and micro-drill resistance measurements are given below.

5.2 ***Beech*** (T33):

- *Ganoderma* sp. is a wood decay fungi that can colonise dead or dysfunctional areas of the wood volume and cause a white rot that may lead to weakening and stem failure.
- The micro-drill measurements recorded in March 2019 indicated there were residual walls of sound wood measuring 18cm to the east, 30cm to the south and 20cm to the west where the stem diameter was recorded as 1050mm. The current stem diameter is greater (1130mm) but the remaining walls of sound wood are thinner, with the exception of the west side which remains about the same.
- The rate of decay is increasing and despite good incremental growth and stem thickening the residual walls of sound wood to the north and east (14cm) are reaching the point - less than 30% of the stem radius - where stem buckling and failure is more likely to occur.

Comment – The rate of decay appears to be increasing faster than annual incremental growth is producing new supporting wood and while sound walls of timber remain to the south and west those to the east and north are significantly thinner and the risk of stem buckling, ductile fracture and tree failure are greater. The tree is next to a car-park and road and near a school with regular high volumes of pedestrian traffic. The tree is fairly squat and has a broad, well-branched crown that lends itself to reduction pruning. Options for managing the tree include felling to ground level – to remove all risk – or reducing the crown to create a more compact form and maintain on a cyclical basis to reduce loading and the likelihood of stem failure.

6.0 Recommendations

6.1 ***High priority*** – work to be completed within **three** months.

T33	Beech	Dismantle and fell to ground level ***or*** shorten ascending stems and lateral branches to reduce crown height & volume and retain for the short-term as replacement tree planting establishes.	Within **3** months.

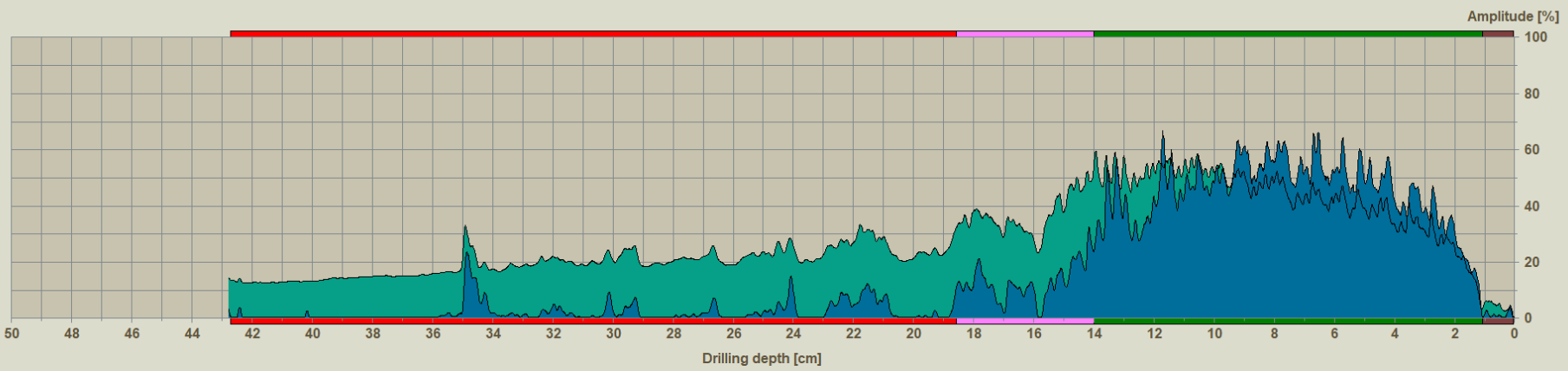
6.2 The recommended works should be undertaken in accordance with *BS 3998:2010 Tree Work – Recommendations* and completed within the identified timescales by qualified

and insured contractors - with the consent of the local planning authority where necessary.

Appendix 1 – Beech (T33) – micro-drill resistance measurements

Measuring / object data

Measurement no.	1	Speed	2500 r/min	Diameter	113,00 cm
ID number	Homehaven beech 1	Needle state	---	Level	Ground level
Drilling depth	42,78 cm	Tilt	0°	Direction	From east
Date	26.01.2023	Offset	96 / 274	Species	Beech
Time	12:15:24	Avg. curve	off / off	Location	Homehaven
Feed	50 cm/min			Name	Jonathan Rodwell



Assessment

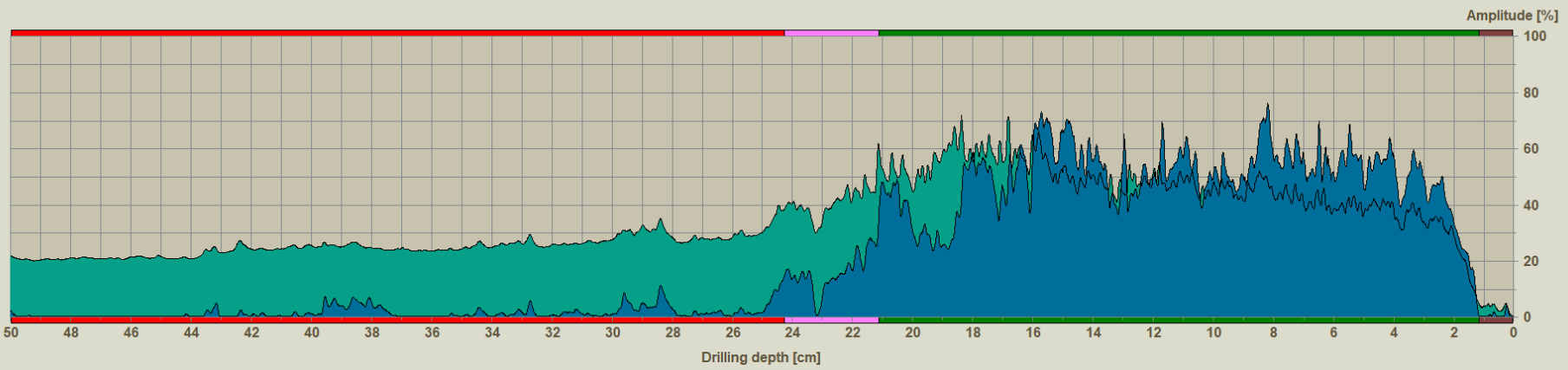
From	0,00 cm	to	1,06 cm	Bark & cambium
From	1,06 cm	to	13,99 cm	Sound wood
From	13,99 cm	to	18,59 cm	Early stage decay
From	18,59 cm	to	42,71 cm	Advanced decay

Comment

Needle retracted at 42.5cm

Measuring / object data

Measurement no.	2	Speed	2500 r/min	Diameter	113,00 cm
ID number	Homehaven beech 2	Needle state	---	Level	Ground level
Drilling depth	50,26 cm	Tilt	0°	Direction	From west
Date	26.01.2023	Offset	93 / 268	Species	Beech
Time	12:17:54	Avg. curve	off / off	Location	Homehaven
Feed	50 cm/min			Name	Jonathan Rodwell



Assessment

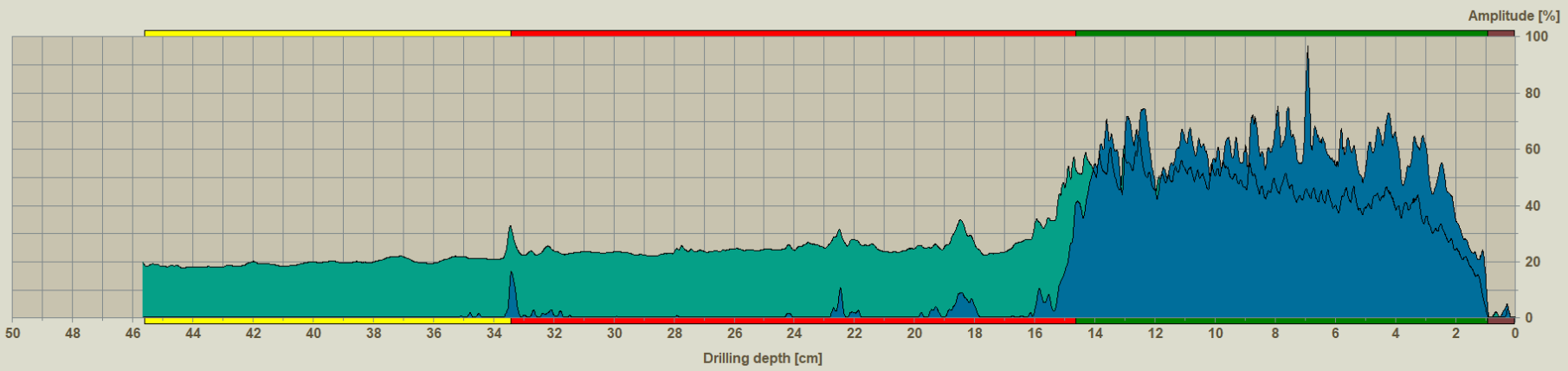
From	0,00 cm	to	1,17 cm	Bark & cambium
From	1,17 cm	to	21,11 cm	Sound wood
From	21,11 cm	to	24,26 cm	Early stage decay
From	24,26 cm	to	50,00 cm	Advanced decay

Comment

Appendix 1 – Beech (T33) – micro-drill resistance measurements

Measuring / object data

Measurement no.	3	Speed	2500 r/min	Diameter	113,00 cm
ID number	Homehaven beech 3	Needle state	---	Level	Ground level
Drilling depth	45,68 cm	Tilt	0°	Direction	From north
Date	26.01.2023	Offset	98 / 558	Species	Beech
Time	12:22:12	Avg. curve	off / off	Location	Homehaven
Feed	50 cm/min			Name	Jonathan Rodwell



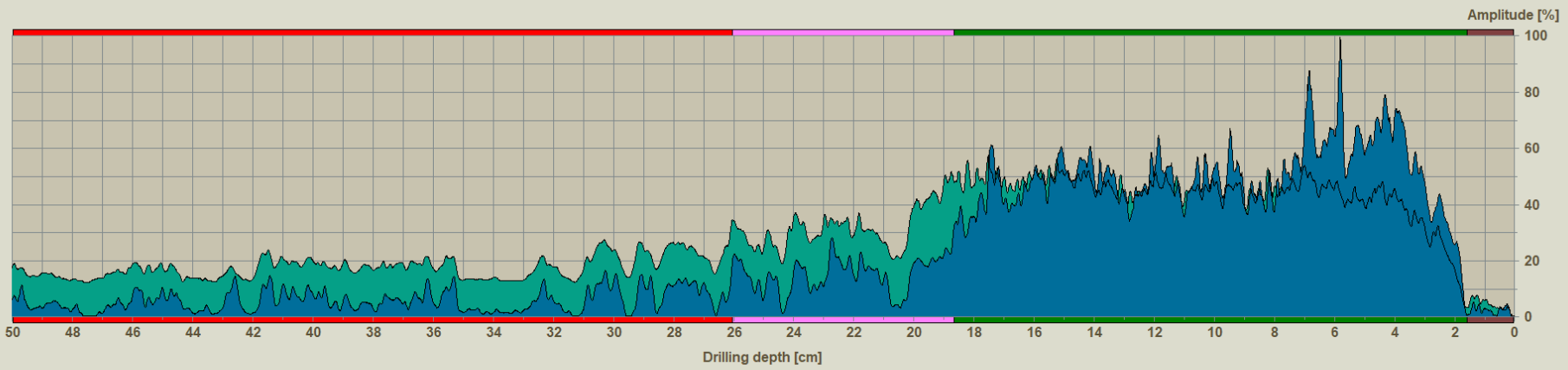
Assessment

From	0,00 cm	to	0,94 cm	Bark & cambium
From	0,94 cm	to	14,62 cm	Sound wood
From	14,62 cm	to	33,41 cm	Advanced decay
From	33,41 cm	to	45,62 cm	Cavity

Comment

Measuring / object data

Measurement no.	4	Speed	2500 r/min	Diameter	113,00 cm
ID number	Homehaven beech 4	Needle state	---	Level	Ground level
Drilling depth	50,30 cm	Tilt	0°	Direction	From south
Date	26.01.2023	Offset	81 / 260	Species	Beech
Time	12:26:23	Avg. curve	off / off	Location	Homehaven
Feed	50 cm/min			Name	Jonathan Rodwell



Assessment

From	0,00 cm	to	1,60 cm	Bark & cambium
From	1,60 cm	to	18,65 cm	Sound wood
From	18,65 cm	to	26,03 cm	Early stage decay
From	26,03 cm	to	50,00 cm	Advanced decay

Comment