



Providing Expertise on Your Trees ®

Arboricultural and

Resi PD400 Report

OUR REFERENCE	AC.2023.409
CLIENT	APA Property Services Ltd.
SITE	58 Bath Road, Reading, Berkshire, RG30 2AY
SURVEY & REPORT BY	Mr I S Thompson (known as Tom) BSc. (Hons.) Arb. MSc. (eFor) MArborA
DATE	24 th June 2024
DATE OF SITE VISIT	13 th June 2024

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1 Introduction

1.1 Instructions

1.1.1 Arbor Cultural Ltd was given written instruction from Dr. Philip Antino of APA Property Services Ltd. to carry out a visual tree inspection and decay detection test on one sycamore tree at 58 Bath Road, Reading, Berkshire, RG30 2AY. Arrangements were made for Arbor Cultural Ltd to survey the site on the 13th June 2024.

1.1.2 The tree was inspected, and this report covers.

- The physiological condition of the trees
- The structural condition of the trees
- The likelihood of failure of the trees
- The risk that the potential failure would pose to people or property
- The most appropriate future management of the trees
- The timeline for re-inspection and any proposed management

1.2 Summary of the Legal Situation

1.2.1 The Occupiers' Liability Act (OLA) 1957 & 1984 established that the site owner or occupier holds the liability for the safety of visitors and those on adjacent lands. Where incidents are both reasonably foreseeable and reasonably preventable, the owner or occupier may be held liable for losses (physical harm to life and/or property).

1.2.2 These circumstances include specific consideration for children; under s2 (3) (a) of the OLA 1957, 'an occupier must be prepared for children to be less careful than adults. The case of *Tomlinson v Congleton Borough Council* ([2003] 1 A.C. 46; [2004] UKHL 47), the 'shallow pond case', expanded on this requirement by stressing the need to consider the inequivalence of danger relative also to people of reduced mobility.

1.2.3 A considerable body of case law has established that, in order to be in a position to foresee, and indeed to prevent harm arising from a tree failure, it is necessary to subject the tree or trees in question to 'regular inspection'. With this inspection undertaken by someone competent, both to identify any defects present, and to interpret their significance for public safety.

1.2.4 An effective system of managing trees should meet the requirements set out in the Management of Health and Safety at Work Regulations 1999 and the associated ACoP (guidance is contained in HSG 65 Successful Health and Safety Management and INDG 163 Five Steps to Risk Assessment).

1.3 Qualifications and Experience:

1.3.1 I have based this report on my site observations and investigations, and I have come to conclusions in the light of my qualifications obtained, and experience gained, whilst working in the field of arboriculture. I have qualifications and practical experience in arboriculture and forestry and list the details in Appendix I.

1.3.2 I have been using the Resi PD 400 for 5 years and before that the Resi S300. I have attended various seminars and presentations put on by Sorbus and I have attended two Claus Mattheck workshops in Germany where Sorbus where there demonstrating this equipment. There was regular use of and interpretation of Resi microdrills.

1.4 Limitations and Use of Copyright

- 1.4.1** All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means without our written permission. Its contents and format are for the exclusive use of APA Property Services Ltd and their associates. It may not be sold, lent out or divulged to any third party not directly involved in this situation without the written consent of Arbor Cultural Ltd.
- 1.4.2** The inspection was undertaken from ground level only using binoculars to assess the aerial parts, except where clearly specified. The report and recommendations relate to the condition of the tree and its surroundings at the time of inspection only. All measurements, proportions and assessments of age are approximate. The report is based on the site visit and a review of any information provided by the clients.
- 1.4.3** This report contains all my advice and opinions, and any representation and/or statements that have, or may have been made which are not specifically and expressly included in this report, should not be relied upon. No responsibility is taken for the accuracy of such statements.
- 1.4.4** My survey of the trees, the soils, and other factors, was initially of a preliminary nature. I have not taken soil or root samples for analysis and the trees have not been climbed but have been inspected from ground level. Following on from this decay detection analysis was undertaken at specific locations to further determine the extent of identified areas of decay.
- 1.4.5** Inspection was carried out on the basis of a ground level, visual examination of external features of each individual tree. The principal objective of the survey was to identify trees, or parts of trees, which appear to be in a hazardous condition, and to advise remedial action to ameliorate the risk they could represent to users of the property and adjacent areas.

- 1.4.6** This report and its recommendations relate to the condition of the trees and their surroundings at the time of inspection only. All measurements, proportions and assessments of age are approximate, except where stated.
- 1.4.7** Visual assessment, in accordance with accepted arboricultural practice, was based on apparent vitality (leaf cover, extension growth), presence of deadwood and die back, fractured, and detached limbs, evidence of excessive basal movement and external indications of stem and basal decay likely to affect the structural condition of the tree.
- 1.4.8** If you, or your advisers, have at your disposal any information to suggest that the property is or has been suffering any tree related structural defect, I would ask that you release the information to us. All relevant data is presented within this report together with any recommendations for further analysis, as appropriate.
- 1.4.9** Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations in this report are only valid for one year. Any changes to the site as it was, e.g., building of extensions, excavation works, importing of soils, extreme weather events etc. will invalidate this report.
- 1.4.10** The client has informed us that T32 is covered by a TPO and has supplied us with a TPO document. This all appears to be in order and served correctly but the Local Planning Authority has not yet been contacted to confirm this.
- 1.4.11** It would be necessary to determine whether either of these planning controls are in operation and any required permissions obtained before commencement of any works and submitting the required notifications or obtaining the required permissions.

1.5 Disclaimer

- 1.5.1** I have no connection with any of the parties involved in this situation that could influence the opinions expressed in this report.

2 The Site

2.1 Site Visit

2.1.1 The site was visited on Thursday 13th June 2024. The weather at the time of inspections was mild, mainly overcast with some sunny spells. The visibility remained good. There was a threat of rain, but the survey and testing were completed before this got too heavy.

2.2 Site Description

2.2.1 There one sycamore tree in the lawn area in the front garden, see the Tree Location Plan in Appendix III and the Images 1-12 in Appendix III.

2.2.2 This sycamore tree T32, *Acer psuedoplatanus* was the only tree inspected and assessed, see Images 1-12.

3 Survey Process and Details

3.1 See Appendix II for full details of methodology and Appendix V for the full Tree Survey Records.

3.2 Trees Included.

3.2.1 Only one sycamore tree T32 specified by the client were assessed and included I this report.

3.2.2 Only onsite trees were included in this survey.

3.3 A Resi PD 400 was used for further clarification of the structural integrity of the pine tree, see Appendices V.

4 Value of Trees

- 4.1** The main system for determining the value of trees in the UK is Capital Asset Value for Amenity Trees (CAVAT). This was developed initially for subsidence claims, but it is widely used for assessing tree valuation for all sorts of reasons. Alternative systems that can be used are Helliwell and Council of Tree and Landscape Appraisers (CTLA).
- 4.2** It is considered that these trees have a moderate to low public amenity value, but also offer a screening value to the property and have a high intrinsic value.
- 4.3** Nowadays there is a new way of measuring tree's value, as the cost of the ecosystem services that they provide is calculated. It is early days for this approach and currently there is only one system for assessing this. This is called iTree. Until this is more widely accepted in the UK with UK specific data, we will continue using CAVAT as a guide for tree value.
- 4.4** It has been known for many years that trees will add value to property prices. This is what estate agents refer to as "mature landscapes." This is reported to increase property values by up to 10%. These trees will offer screening from the road noise as well as helping to create a tranquil environment.
- 4.5** Further to this intrinsic value a basic CAVAT quick method calculation has been undertaken to provide the replacement cost of the two trees that are the focus of this report, just to give some sort of perspective on the trees value, against any potential risk that they present.

4.6 Example of CAVAT Quick Valuations to assess replacement costs for T003-008.

CAVAT

SPREADSHEET TO CALCULATE VALUE OF INDIVIDUAL TREE STOCK (QUICK METHOD)

© Christopher Neilan
Created by Alejandra Sleet and Phillip Handley

Only enter data in the pale-green boxes

CAVAT	Quantities you measure / look up	Calculated Values
<u>Step 1: Basic Value</u>		
Trunk Diameter (cm)	50 - <60	
Unit Value Factor	16.26	
Basic Value		£38,942.54
<u>Step 2: CTI Value</u>		
Community Tree Index (CTI) Factor	150	
Community Tree Index (CTI) Value		£58,413.81
<u>Step 3: Functional Value</u>		
Functional Factor	50	
Functional Value		£29,206.90
<u>Step 4: Final Value</u>		
Life Expectancy Factor	10 - <20	
FINAL VALUE		£16,064

Figure 1 Example of Quick CAVAT on Oak tree

- 4.7** The stem diameters are used, in band widths, to calculate and initial whole tree valuation. This is based on the figures for the cost of a tree to be purchased, delivered, and planed on site, along with post planting maintenance. This cost will obviously increase as the size of the trees increase, and this relationship is linear.
- 4.8** The stem diameter is used to provide the initial value, and the physiological condition and safe life expectancy are used to determine the percentage of the whole tree valuation that is appropriate, and finally the CTI figure is used based on the population density, using figures provided within the CAVAT system and based om the local authority they are in.

- 4.9** It is now also possible to calculate the economic value of some of the environmental functions and ecosystem services that trees provide, using the iTree system. The methodology for this method is open source but to get the calculated values you must send the result to USA and pay for the calculations.
- 4.10** It is not suggested that it is likely that the tree will ever all be removed and replaced. It is just a means of calculating the value of the asset because this can be used to justify ongoing management costs and expenses in a form that can be used in budgeting.
- 4.11** The total replacement cost for T32 is calculated at £17,560 using the CAVAT quick method.

5 Findings

5.1 General Observations

5.1.1 The trees are all located.

5.1.2 T32 was located in the front garden in an area of lawn, but close to and overhanging the driveway, see images 1, 2, 11, and 12 in Appendix III.

5.1.3 The tree was around 16 m tall and had a reasonable balance crown with a radius of around 7 m to the four cardinal points, see Image 1. It had a stem diameter of 710 mm, and the tree was early mature.

5.1.4 There were two large low branches at around 1.3 m height, one growing towards the east and one to the northeast, see Images 3 to 6.

5.1.5 There were some low dead branches with some dark staining on these branches, see Images 3 to 10. There were also some areas of localised necrotic bark.

5.1.6 This tree was individually inspected and recorded and plotted on the plan that is in Appendix III.

5.2 Previous Works

5.2.1 I was not given access to any previous tree inspection records or tree work recommendations.

5.3 Resi PD 400 Findings

5.3.1 Please refer to Appendix V for the Methodology and Images of the Results.

5.3.2 The Resi PD 400 tests for the two branches showed a small section of bark and sapwood on either side, before showing solid sound wood throughout the centre of the branches.

5.3.3 The Resi PD 400 tests for the four cardinal points at a height of around 1.3 m showed some bark and sapwood before showing solid sound wood for the rest of the 400 mm drill test. The stem diameter was 710 mm, so these four tests covered the whole of the trunk area.

6 Interpretation, Discussion, and Opinion

- 6.1** The tree was categorised as being in a low target area. This was due to the distance for the public road, and the low foot and vehicle traffic on the site.
- 6.2** The tree was in a declining condition.
- 6.3** The local authority the Reading Borough Council served and confirmed a TPO in 2003 which included the sycamore tree T32.
- 6.4** There were some areas of deadwood and dieback, and there was some necrotic bark, and black staining on the exposed sapwood areas.
- 6.5** It was considered that this could be due to sooty bark disease *Cryptostroma corticale*, because it looks similar to the early stages of that disease. This disease is becoming more common now, probably due to sycamore trees becoming increasingly drought stressed.
- 6.6** Sooty bark disease affects the physiological health of the sycamore tree, not their structural condition. It targets the vascular system, preventing the movement of water, nutrients and carbohydrates between the roots and the branches.
- 6.7** This can initially result in wilting and ultimately death, but it will not cause any decay or structural weakening. That would be achieved by secondary infections further down the line.
- 6.8** Sooty bark disease can also cause respiratory issues for humans.

- 6.9** The Resi PD 400 tests indicated that there was no decay or strength loss of any kind in either of the two low branches or in the trunk at 1.3 m. This was what was anticipated
- 6.10** There are two low branches extending over the driveway, see Images 9 and 10 in Appendix III. One of them has an impact wound, most likely from delivery lorries, and this has some dark staining on the exposed sapwood.
- 6.11** Both of the low branches over the driveway have secondary growth points near to where they start to overhang the driveway.
- 6.12** It is proposed to cut these branches back to the locations indicated on Images 9 and 10 in Appendix III, to remove the overhang of the driveway, because this will prevent any further vehicle damage occurring to the tree. This is recommended to be completed within the next six months subject to obtaining the required permission from Reading Borough Council.
- 6.13** The condition of the tree, and any further dieback or dark staining should be monitored in future inspections. If the tree fails to flush or dies back completely, then you should inform the Council and get permission to remove the tree.
- 6.14** This tree is recommended for a reinspection within the next two years.

7 Conclusion and Recommendations

7.1 Conclusion

7.1.1 It is proposed to cut these branches back to the locations indicated on Images 11 and 12 in Appendix III, to remove the overhang of the driveway. This is recommended to be completed within the next six months subject to obtaining the required permission from Reading Borough Council

7.1.3 The tree should be re-inspected within the next 2 years.

7.2 Recommendations

- 7.2.1** Management recommendations given in the survey data are given based on good arboricultural management and to mitigate Health and Safety risk.
- 7.2.2** All recommended works should be undertaken by appropriately qualified Arboricultural Contractors, to BS3998 Recommendations for Tree Work 2010 or current Industry Best Practice.
- 7.2.3** This survey and survey results are for the sole use of the client APA Property Services Ltd and their associates.
- 7.2.4** The survey results are based upon current site conditions. Arbor Cultural Ltd. should be informed of any future change in those conditions at the earliest opportunity.

References and Bibliography and Glossary of Terms

References and Bibliography

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Glossary of Terms

Glossary of Terms

Bacterial canker	Has lesions on the stems that can exude a gum like exudate that carries the bacteria.
Brash	Thin wood removed from trees.
Chlorosis/Chlorotic	An abnormal yellowing or blanching of the leaves due to lack of chlorophyll.
Canopy/Crown	Foliage bearing part of the tree.
Crown lifting.	The removal of the lower branches of the tree.
Crown thinning.	The complete removal of selected limbs/lateral branches to thin the density of the crown.
Dysfunctional wood	Woody tissues no longer function.
Epicormic growth	Young, vigorous shoots arising from the external tissues of a stem. Epicormic growth is usually induced if a limb is removed or is broken off and the light factor changes (sprouts) or if a woody plant is coppiced or pollarded.
Flush cut	A pruning cut close to the parent stem which removes part of the branch bark ridge.
Heartwood	The heartwood is the dark area in the centre of the tree.
Lateral branch	A side branch which arises from a main stem.
Mulch	A layer of bulky organic material placed around the stem.
Occlusion (Occluded)	The process of wound wood closing a wound.
Parasitic	Organisms that live off other organisms, or hosts, to survive
Pathogen	A micro-organism which causes disease in another organism.
Reaction Wood	Additional wood that is put on by a tree to address increased loads.
Reaction Zone	An area where reaction wood is formed.

Glossary of Terms Continued

Saprotrophic	Organisms that obtain their nutrition from non-living organic materials.
Soft rot	A kind of wood decay in which a fungus degrades cellulose within the cell walls, without causing overall degradation of the wall.
Stem	Principal above ground structural component(s) of a tree that supports its branches.
White rot	Various kinds of wood decay in which lignin, usually together with cellulose and other wood constituents is degraded.
Wound	Injury in a tree caused by a physical force.
Wound Wood	Additional wood that is put on by a tree in reaction to damage or wounding, with the aim of healing over the wound.

Appendix I Abridged CV: Qualifications and Experience

I S Tom Thompson BSc (Hons Arb), MSc eFor, MArborA Cert Arb

1 Qualifications

Subjects	Level	Dates	
Bond Solon Expert Witness Training (CUBS)	Pass	2017	
International Society of Arboriculture Certified Arborist	Pass	May	2012
Professional Tree Inspection Course (LANTRA)	Pass	April	2011
BSc Hons Arboriculture	(2.1)	2008	2009
FdSc Arboriculture	Distinction	2004	2007
MSc. Environmental Forestry (MSc eFor)	Pass	2001	2002
BSc. Hons Env Science (Conservation Management)	(2.2)	1997	2000
Environmental Studies	Access Course	1996	1997
Forestry & Practical Environmental Skills	NVQ I & II	1996	1997

2 Career Summary

Tom Thompson is a professional member of the Arboricultural Association (AA), an International Society of Arboriculture (ISA) Certified Arborist, Chairman of the Consulting Arborist Society (CAS), and an associate member of the Institute of chartered Foresters (ICF).

He has worked in the private and public sector, before setting up Arbor Cultural in 2014, to promote the value and benefits of trees.

He currently heads up the BIM4Arb group promoting Building Information Modelling (BIM) to the arboricultural industry.

He then spent five years working in new woodland creation, firstly for ADAS in the National Forest and then for 18 months with the Forestry Commission in Cobham, Kent. During this time, he began a degree in Arboriculture through Myerscough College.

This course enabled him to make the transition from forestry to arboriculture where he spent 5 years as a tree officer, firstly at St Albans and then more recently at King's Lynn and West Norfolk. He joined Connick Tree Care in May 2012, where he worked as their Principal Arboricultural Consultant.

Having worked as the principal tree consultant at Connick tree care for two years he established Arbor Cultural Ltd. In 2014, with the intent to provide professional advice in all aspects of tree consultancy, to enable clients to obtain planning permission, house purchase completion, and successfully address all tree related health and safety matters. He is passionate about trees, and he is keen to promote the economic value and benefits of the urban forest.

3 Areas of Competence

- Tree hazard risk assessments for tree owners
- Decay assessment and mapping
- Mortgage and Insurance reports to assess the influence of trees on buildings
- Pre-development site surveys and arboricultural implication studies
- Tree management reports to prioritise maintenance programs
- Tree related insurance claims
- Diagnosis of tree disorders
- Arboricultural Expert Witness

4 Selected Continual Professional Development

Tom continually keeps up to date with regular in person and online training to exceed the requirements of all his professional membership.

These are UK, European, and American based trainings.

He regularly attends conferences, and networking events to share and discuss current and future developments on the arboricultural industry and associated industries.

Subjects covered include:

- Tree Risk Assessment
- Decay Detection Equipment
- Tree Biomechanics
- Tree Pull Testing
- Expert Witness
- Pest and Diseases
- Tree Valuation and Economics
- Veteran Tree Management
- Tree Population Management
- Building Information Modelling
- Digital Practice
- Business Management
- Trees and Buildings
- Tree Law and Policy
- Soil and Tree Interaction
- Tree Pruning Practices
- Biodiversity and Wildlife
- Designing with Trees
- Young Tree Establishment

Training Providers Include but are NOT Limited to:

- Arboricultural Association
- Consulting Arborist Society
- International Society of Arboriculture
- Municipal Tree Officers
- London Tree Officers
- LANTRA
- Rinntech
- Claus Mattheck
- Landscape Institute

5 Professional Affiliations

Arboricultural Association (AA) Professional Member	since 2008
International Society of Arboriculture (ISA) Certified Arborist	since 2012
Consulting Arborists Society (CAS)m Professional Member	since 2014
Institute of Chartered Foresters Associate Members	since 2018
Royal Forestry Society	since 1999

Appendix II Tree Survey Methodology

1.1 The Survey Schedule

- **Approximate tree height in metres.**
- **Tree stem diameter, in millimetres, measured at 1.5m*.**
- **Age class (see overleaf).**
- **Observed physiological/structural condition and assessment of direct damage to built structures excluding drains.**
- **Management recommendations.**
- **Works' priority.**
- **Tree location.**

- * If multi-stemmed then measures at ground level B.D. (Basal Diameter)**
- If not possible to measure, then estimated and recorded with the # symbol.**

1.2 Survey Procedure

1.2.1 The survey was conducted to industry Best Practice.

1.3 Description of Tree Categories

Age Class:

- NP Newly Planted** – A tree that is still receiving post planting maintenance and still has a stake supporting it.
- Y Young** – Recently planted or establishing tree that could be transplanted without specialist equipment, i.e., up to 12-14cm stem diameter.
- SM Semi Mature** - An establishing tree which is still exhibiting strong apical dominance and has significant growth potential.
- EM Early Mature re-** A tree that is aching its ultimate potential height and losing apical dominance, whose growth rate is slowing down but will still increase in stem diameter and crown spread. It also has a good safe life expectancy remaining.
- M Mature** - A tree with limited potential for any increase in size but with reasonable safe useful life expectancy.
- OM Over mature** – A senescent or moribund specimen with a limited safe useful life expectancy.
- V Veteran** – Trees of great age for species with important biological, aesthetic, conservation, or cultural value. Trees are in a state of decline due to old age.

1.4 Tree Condition

P = Physiological	Good	No significant health problems.
	Fair	Symptoms of ill health that can be remediated.
	Poor	Significant ill health.
	Dead	Dead Tree.

S = Structural:	Good	No significant defects.
	Fair	Significant defects that can be remediated.
	Poor	Significant defects with no remedy.

1.5 Deadwood Categorisation

Minor Deadwood	Less than 50mm in diameter or less than 3m in length.
Moderate Deadwood	Greater than 50mm but less than 150mm in diameter or less than 5m in length but greater than 3m in length.
Major Deadwood	Greater than 150mm in diameter or greater than 5m in length.

Appendix III Tree Location Plan



Appendix IV Images



Image 1 T32 an early mature sycamore tree viewed from the north.



Image 2 T32 an early mature sycamore tree viewed from the south.



Image 3 Southern side of the trunk of sycamore T32.



Image 4 Western side of the trunk of sycamore T32.



Image 5 **Northern side of the trunk of sycamore T32.**



Image 6 **Eastern side of the trunk of sycamore T32.**



Image 7 **Dead branches with dark staining on sycamore T32.**



Image 8 **Dead branches with dark staining on sycamore T32.**



Image 9 Branch wound on eastern side over driveway, with dark staining.



Image 10 Branch wound on eastern side over driveway.



Image 11 **Low branches from sycamore tree T32 extending over the driveway.**

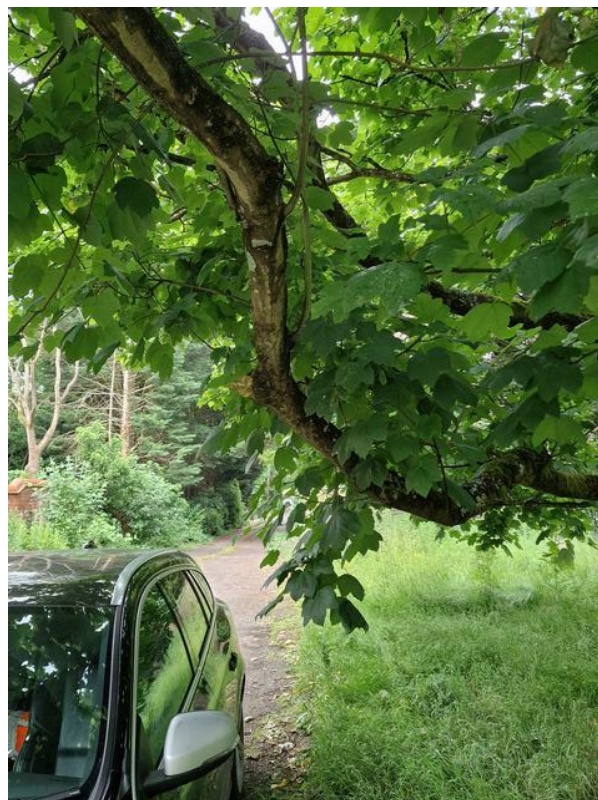


Image 12 **Low branches from sycamore tree T32 extending over the driveway.**

Appendix V Resi Details, Methodology and Results

Decay in Trees

Decay in trees is of major concern in relation to human safety and damage to property. Significant decay can eventually weaken stems, branches, or roots enough to increase the chance of mechanical failure. Decay is a natural process and commonly occurs in trees without causing structural weakness. It is therefore inappropriate to regard a tree as hazardous merely because decay has been identified.

It is therefore important to be able to evaluate the tree to determine the extent of the decay so that informed management decisions can be made. This will ensure that hazardous trees are correctly identified, and relatively safe trees are not removed or subjected to unsuitable pruning.

Resi PD400 Micro Drill

The IML RESI PD400 is a specialist instrument designed for accurate measurement of the resistance given by wood to drilling (torsional resistance). Resistance to drilling by wood is not a complete measure of wood strength, but resistance is usually significantly reduced if wood is weakened by decay.

This device is used to excavate a narrow penetration track with a fine drill where decay is suspected. The resistance of the wood to drilling is indicated by two lines on a graph of the 400mm long test. One line measures the resistance to rotation movement, and the other the resistance to the forward motion of the drill. These graphs can be used to diagnose decay and construct accurate decay maps.

The main concerns in using drilling diagnostic techniques are that the holes bored into existing decay columns may introduce decay into the previously sound shell of outer wood. The Resi drill bit causes minimal damage as it is of small diameter which leaves a narrow penetration track. It also does not remove the wood fragments when extracted. There are several factors that can affect the resistance given by wood to a penetrating drill.

The IML Resi PD400 has a drill diameter of 3mm and a drill length of 400mm.



Photo of Resi IML Resi PD400



Photo of Resistograph in use

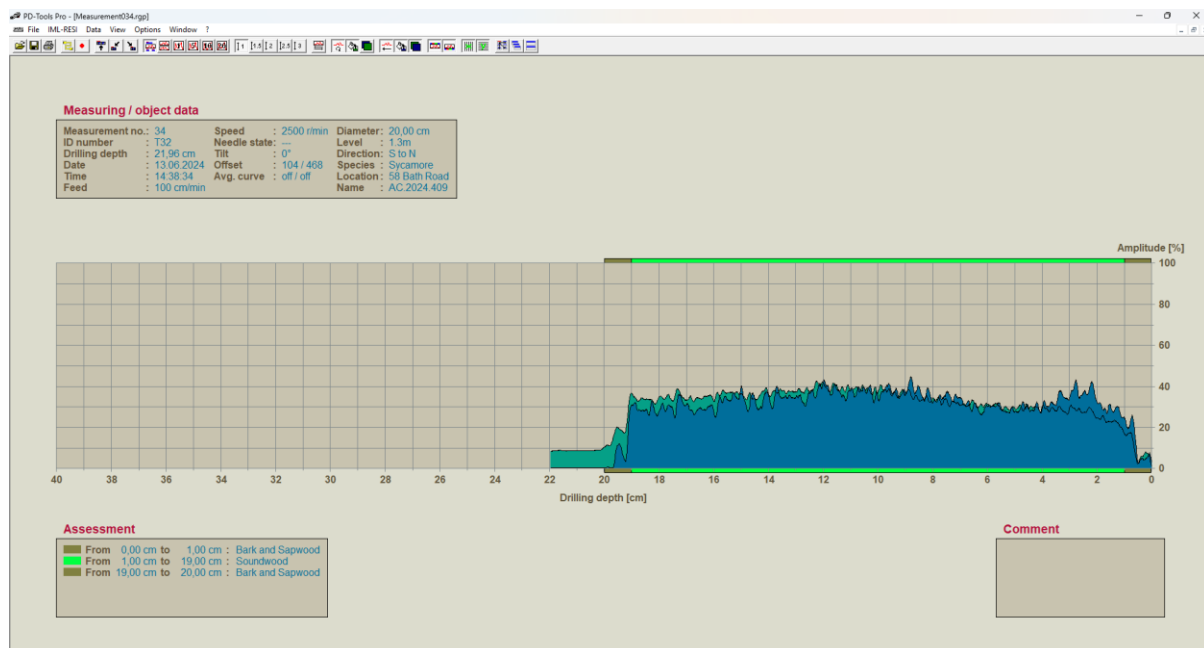


Plate 1 Resi trace for T32 from 1.3 m high 20 cm diameter branch testing S to N.

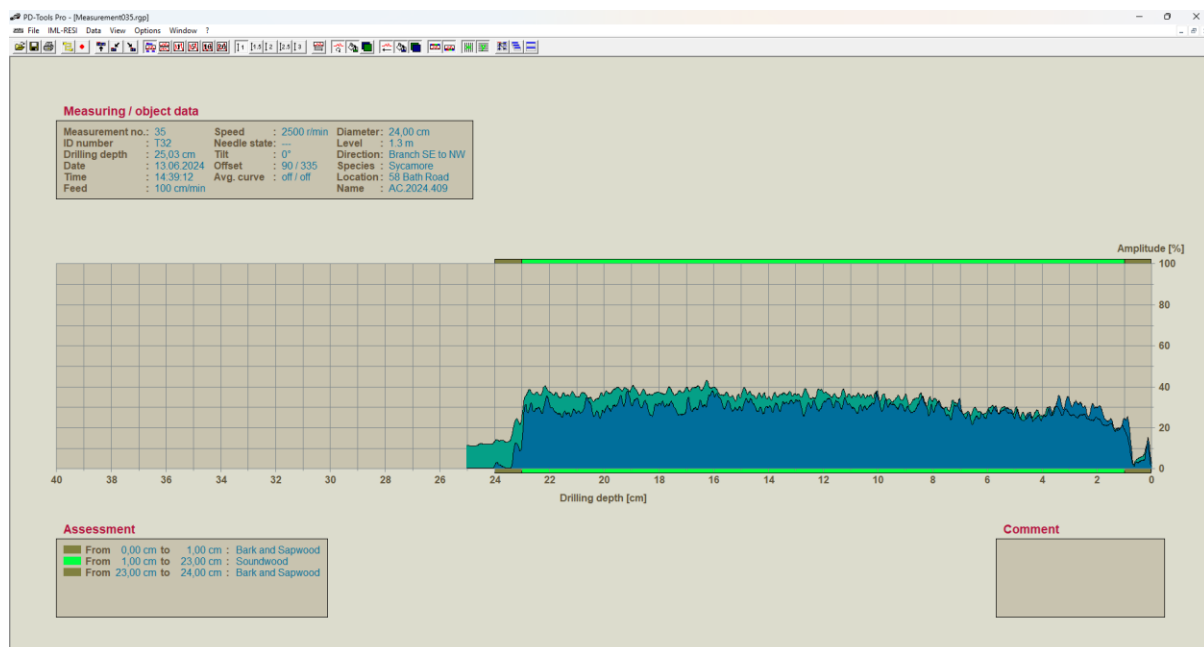


Plate 2 Resi trace for T32 from 1.3 m high 24 cm diameter branch testing SE to NW.



Plate 3 **Resi trace for T32 from South to North.**

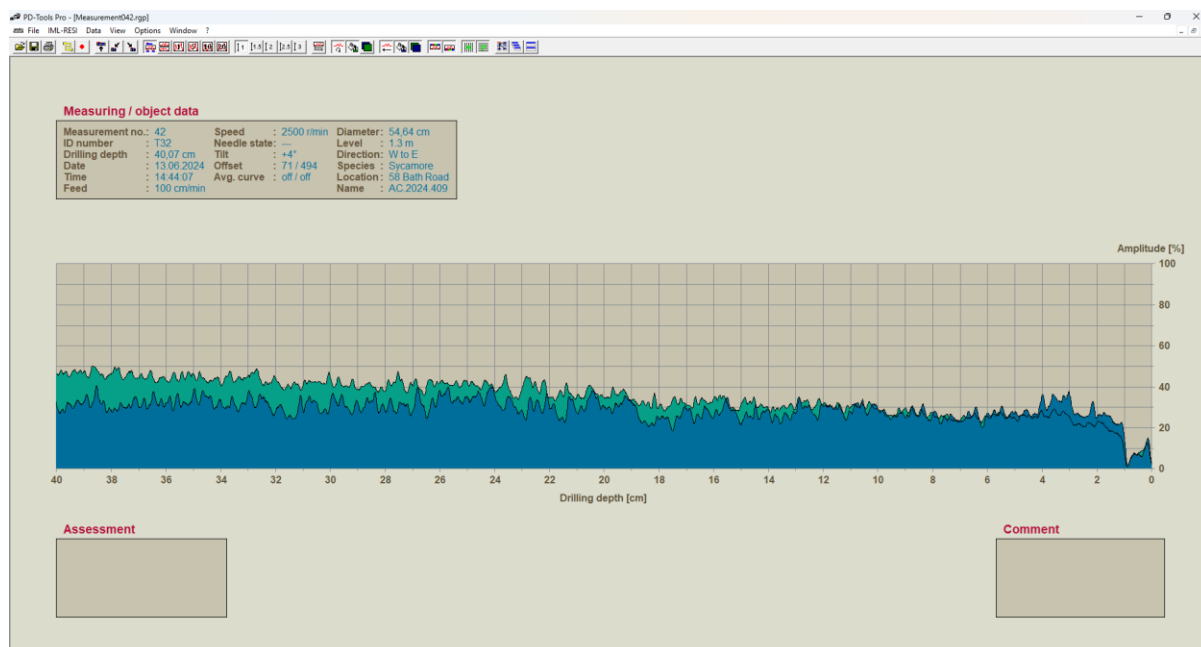


Plate 4 **Resi trace for T32 from West to East.**

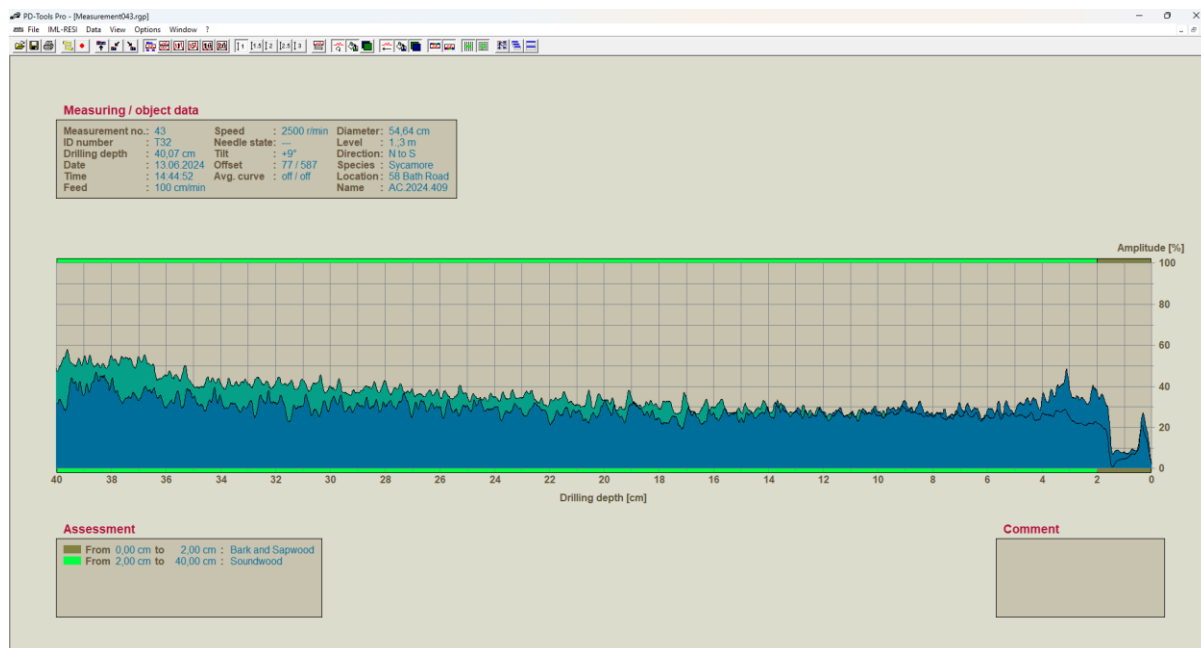


Plate 5 Resi trace for T32 from North to South.

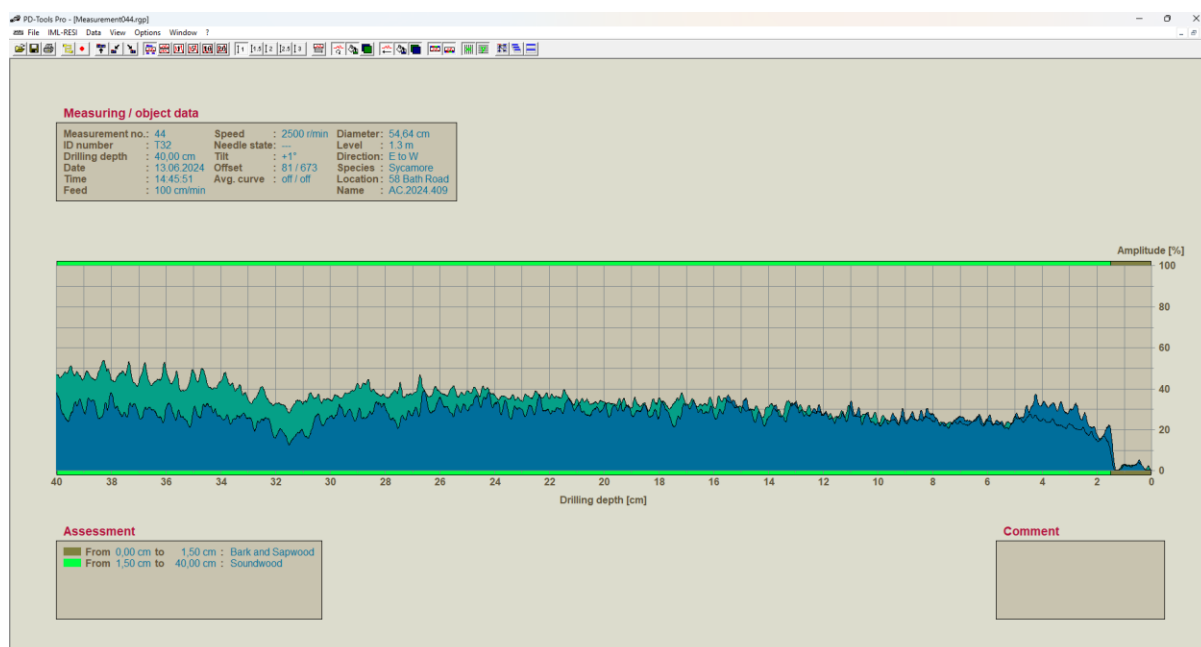


Plate 6 Resi trace for T32 from East to West.