Arboricultural Report

Decay Detection Investigation Report

Bedford Square
Bedford Estates
Bloomsbury
London
WC1B 3JA

160523-PT-02

22nd March 2017

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Project	Bedford Square, Bedford Estates, London
Report Type	Assessment of internal decay and tree condition
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CONTENTS PAGE

1 SUMMARY REPORT

1.1 This report has been commissioned by Thomas Abbott, to provide an assessment of the condition of, and information as to the level of internal decay in 2 plane trees and an elm tree at Bedford Square.

1.2 This report includes:

- An assessment of the overall condition of the trees, the degree of decay within the trees and the ratio of sound timber remaining.
- Recommendations for tree work

1.3 My conclusions are that T90 should be felled and replaced, T82 requires additional crown reduction work and T142 does not currently require any further work.

2 INTRODUCTION

Instructions

2.1 My name is James Chambers; I am an arboricultural consultant dealing with trees in relation to all forms of human activity. I have some 17 years' experience in Arboriculture, including 13 years as a local authority tree manager. I hold the National Diploma in Arboriculture, and I am a qualified professional tree inspector (LANTRA) and Technician Member of the Arboricultural Association.

Scope and limitations

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2.3 The results of the test only give an indication of the level of internal decay within a tree which can help make an assessment for a tree's potential for failure, however it must be remembered that due to the light weight construction principles of nature there is a natural failure rate even amongst healthy trees with no internal decay.

Background details

2.4 The tests were undertaken on Monday 20th March. The weather conditions were damp and cloudy with intermittent showers.

TREE INSPECTION

Image 1 – Aerial view of the property with the approximate positions of the tested trees indicated (Bing Maps)

Tree and test details

2.5 All three trees are growing around the perimeter of the locked private garden at Bedford Square.

2.6 T82 plane is mature and approximately 20m tall with a crown spread of 12m, and stem diameter of 145cm at 1.5m.

2.7 T90 plane is also mature and approximately 22m tall with a crown spread of 21m, and stem diameter of 125cm at 1.5m.

2.8 T142 elm is early mature and approximately 14m tall with a crown spread of 12m, and stem diameter of 45cm at 1.5m.

Target evaluation

2.9 All three trees overhang the public footpath around the perimeter of the garden and T82 and T90 also overhang the public highway, and are within falling distance of nearby buildings.

Tree benefit evaluation

2.10 All trees on site are protected by a Tree Preservation Order.

Image 2 T90 plane tree viewed from the north west

Image 3 T82 plane tree viewed from the north east

Image 4 T142 elm tree viewed from the south

Observations

2.11 T90 has been heavily reduced in the recent past, T82 (plane) and T142 (elm) have been crown reduced with the last 12 months or so. T90 (plane) has poor vitality, T82 and T142 have fair vitality.

2.12 T90 (plane) and T82 (plane) have fungal fruiting bodies of *Rigidoporus ulmarius* and T90 also has *Perreniporia fraxinea* at the base. T142 (elm) has a narrow column of dead bark and dysfunctional wood likely associated with an historic branch removal.

Image 5 damaged section below pruing wound on T142 Elm

Image 6 *Rigidoporous ulmarius* (juvenile, left) and probable *Perreniporia fraxinea* (decayed, right) fungal fruit bodies at the base of T90 plane.

Images 7 & 8 probable *Rigidoporous ulmarius* (juvenile - left , decayed - right) fungal fruit bodies at the base of T82 plane.

2.13 T90 and T82 (planes) have very significant reaction growth at the base which may be indicative of reaction to historic white rot, though no white rot fungal fruiting bodies were observed on T82.

2.14 T142 (elm) has some callous growth by the strip of dead bark and dysfunctional wood, and has recently been crown reduced following our initial inspection last year.

3 DECAY INVESTIGATION RESULTS

PiCUS investigations involve an assessment of the consistency of wood within a tree by passing sound waves through the trunk and measuring how long they take to reach sensors placed around the circumference. Sound travels relatively slowly through decayed wood.

The Tomograms (images 12 & 13) includes a scale at the top showing;

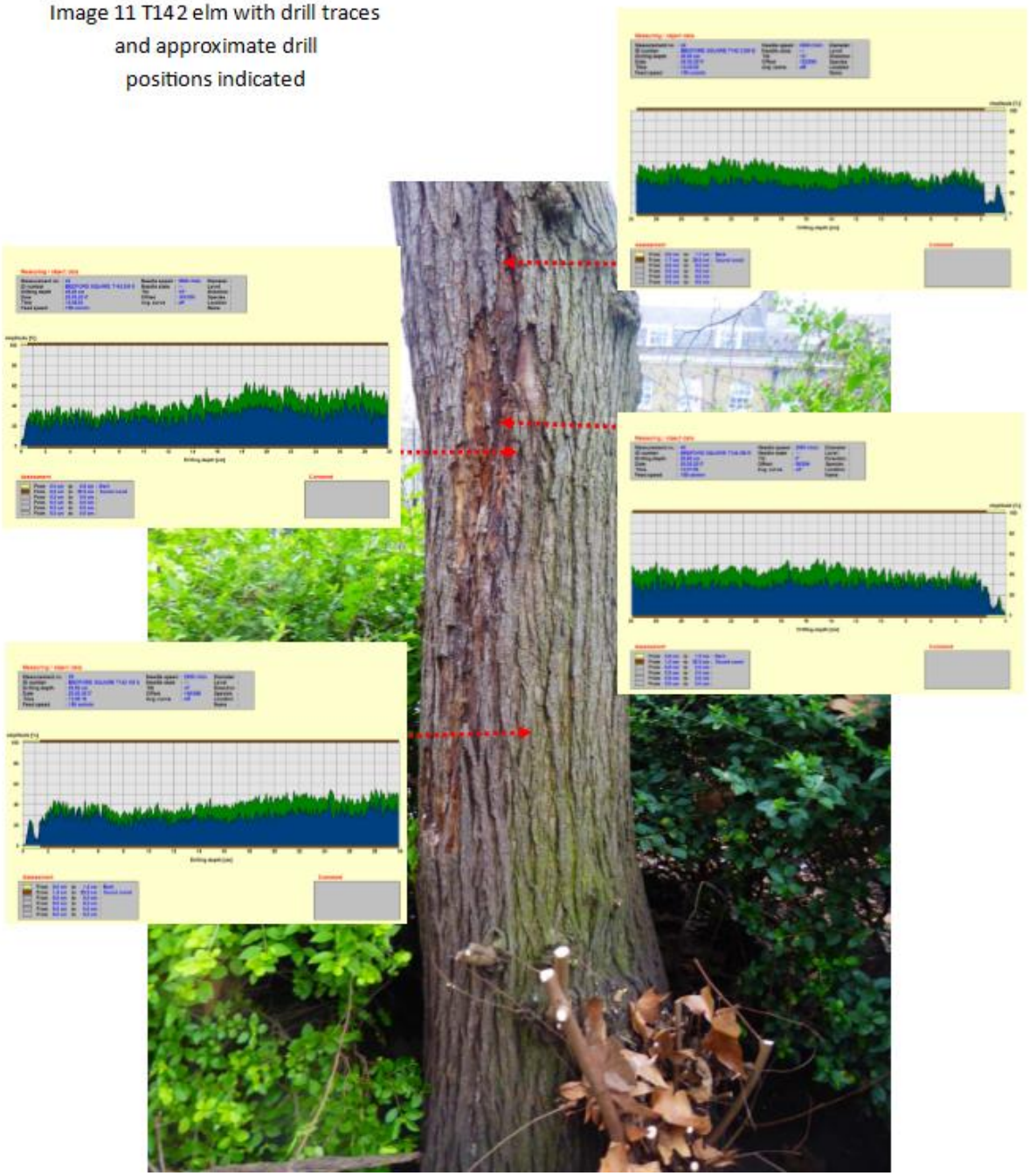
HIGHERVELOCITYTOLOWERVELOCITY *indicating* **SOUNDWOODTODECAYEDWOOD**

Resistograph testing involves measuring the levels of resistance to drilling by passing a very fine drill through the wood to determine its consistency. The results show high peaks and low peaks for relatively high and low resistance. Decayed wood normally has lower resistance to drilling.

Image 9 T90 plane with the approximate positon of the PiCUS tomogram overlaid

Image 10 T82 plane with the approximate positon of the PiCUS tomogram overlaid

Image 11 T142 elm with drill traces and approximate drill positions indicated



PiCUS

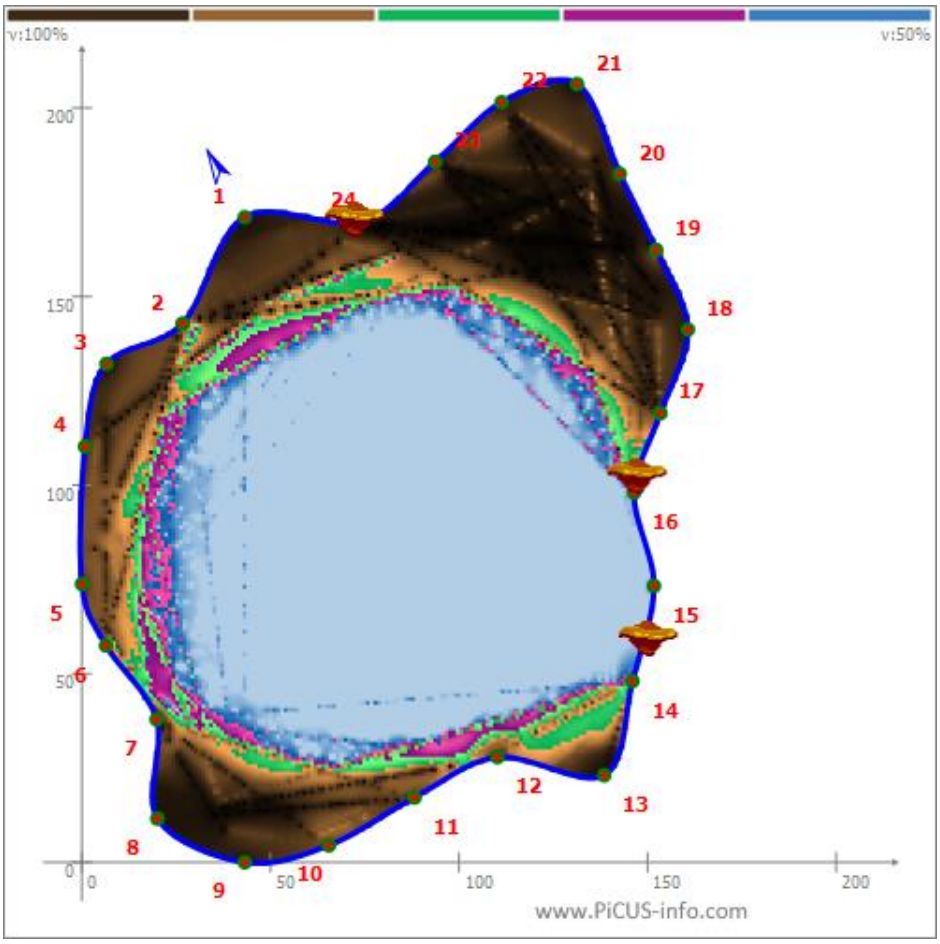


Image 12 – T90 plane tree PiCUS tomogram taken at approximately 6cm above ground level.

3.1 The PiCUS tomogram of T90 plane tree at 6cm shows extensive internal decay at the test height.

3.2 A juvenile fungal fruiting body of *Rigidoporus ulmarius* is present by measuring point 16 and a decayed fungal fruiting body, probably *Perreniporia fraxinea* was present by measuring point 15 (see image 6).

3.3 There is another juvenile fungal fruiting body at measuring point 24 which is likely to be of one of the two species previously referred to.

3.4 The crown shows poor vitality with limited regrowth following the reduction (image 2).

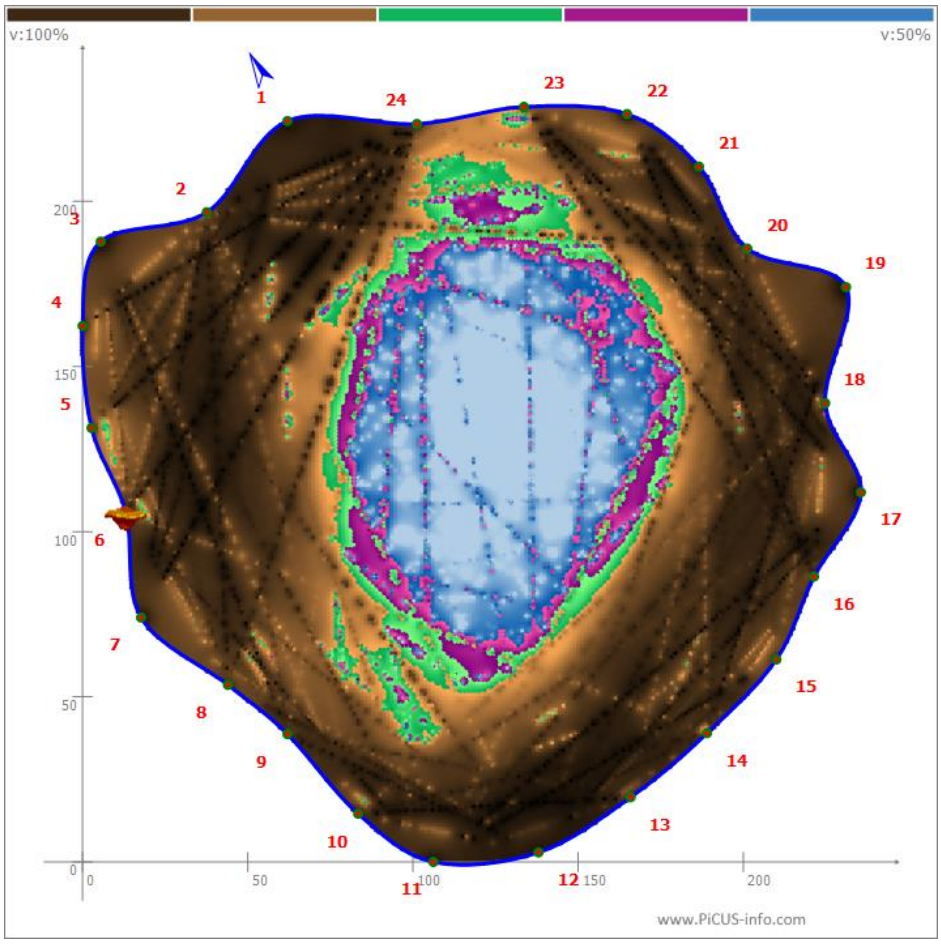


Image 13 – T82 plane PiCUS tomogram taken at approximately 4cm above ground level

3.5 The above tomogram shows significant internal decay surrounding by a considerable amount of remaining sound wood at the test height. The positions of a juvenile *Rigidoporus ulmarius* fungal fruiting bodies is indicated by the icon at measuring point 6 (image 7).

3.6 An additional, decayed fungal fruiting body, probably *Rigidoporus ulmarius,* was found on the ground in that area (image 8).

Resistograph

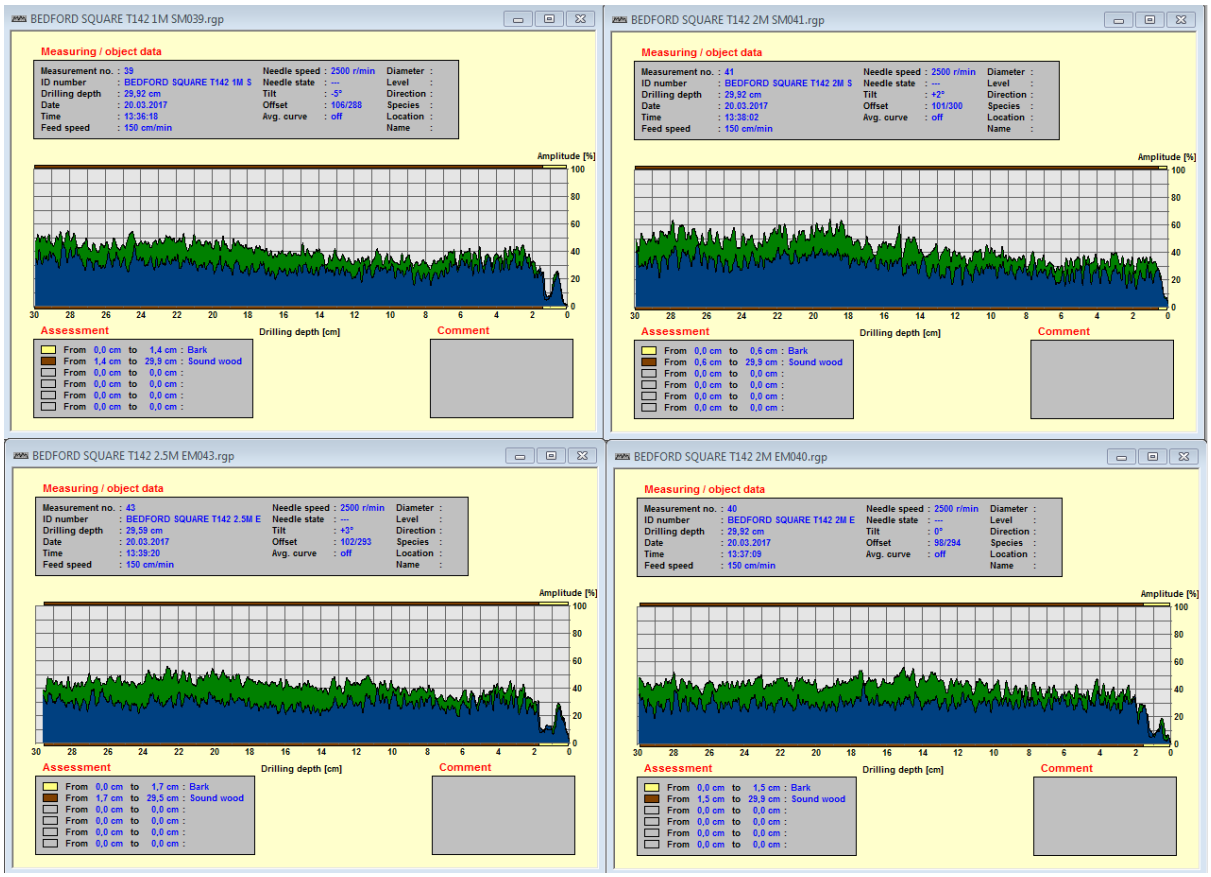


Image 14 – T142 elm Resistograph testing, results shown clockwise from top left – 1m south, 2m south, 2m east, 2.5m east. Results are read from right to left.

3.7 The Resistograph testing showed sound wood with a high resistance to drilling at each test height (image 11).

4 CONCLUSIONS

4.1 T90 plane has very significant decay at the base, poor vitality following heavy crown reduction work, and the condition of the roots colonised by *Rigidoporus ulmarius* and *Perreniporia fraxinea* is unknown.

4.2 The tree has a very limited useful lifespan.

4.3 T82 plane has significant decay at the base, fair vitality following recent crown reduction work and the condition of the roots colonised by *Rigidoporus ulmarius* is also unknown.

4.4 The tree can remain with a reasonable useful lifespan with additional crown reduction works to minimise the effect of wind loading on the stem, regular maintenance of the tree at a lower height, and continued monitoring of the overall condition and development of decay at the base.

4.5 T142 elm has recently been reduced and does not currently require further works.

4.6 The condition of T142 should also be regularly monitored.

5 RECOMMENDATIONS

5.1 T90 plane should be felled and the stump removed to facilitate replacement planting, within 12 months.

5.2 Due to pathogens currently affecting plane trees in Europe, Massaria and Plane Wilt, for example, it is recommended that a large specimen Tulip Tree – *Liriodendron tulpifera* is planted as a replacement tree in the first winter following the removal of the plane tree.

5.3 T82 plane - recommend reduce height to suitable growth points approximately 1-2m below previous reduction points to minimise wind loading on tree, and reduce elongated lower lateral branches by approximately 2-3m to help reduce sail area and minimise wind loading within 6 months.

5.4 T82 should have additional decay detection investigations at the base in two years.

5.5 As the trees are protected the local authority must be contacted for permission prior to any works being undertaken.

- Feasibility Tree Surveys
- British Standard 5837 Tree Surveys
- Tree Constraints Reports & Drawings
- Appeal Statements & Proofs
- Expert Witness
- Evidence at Hearings & Public Inquiries
- Method Statements to Satisfy Planning Conditions
- Design Solutions
- Landscape Plans
- Tender Documents & Drawings
- Supervision & Inspection of Works
- Contract & Project Management
- Health & Safety Surveys
- GPS Surveys
- Computerised Tree Population Surveys
- CAD Plans & Consultancy
- Subsidence Risk Assessments
- Mortgage & Insurance Reports
- TPO Review
- Local Government Officer Contracts
- Arboricultural & Ecological Reports for Planning
- Habitat Surveys (Extended Phase 1/ Walkover/ Botanical)
- Protected Species Surveys
- Ecological Mitigation & Licencing
- BREEAM & CFSH
- Ecological Management Plans
- Hedgerow Surveys
- Landscape Analysis

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