

24 Heath Drive Tree Condition Survey

Prepared by:

Rachel Crookes
Eight Associates
Ground Floor
57a Great Suffolk Street
London, SE1 0BB

email:

rachel@eightassociates.co.uk

Our Reference:

2349 - 24 Heath Drive - Tree Condition
Survey - 1707-21rc.docx

Date of Issue:

21.07.2017

Prepared for:

Sebastian Potiriadis
The Estate Office
32-38 Scrutton Street
London
EC2A 4RQ

Issue Status

24 Heath Drive

Tree Condition Survey

Prepared on behalf of Eight Associates by
Rachel Crookes
Position: Sustainability Consultant
Signature: RC

Verified by
Stacey Cougill
Position: Lead Sustainability Consultant
Signature: SC

DISCLAIMER

This report is made on behalf of Eight Associates. By receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

Contents:	Contact Details.....	3
	Visual Tree Assessment.....	5
	Tree Inspection Results.....	6
	Consideration of Findings.....	9
	Risk Assessment and Recommendations.....	10
	Appendix 1: Photos.....	11
	Appendix 2: Limitations of the Tree Condition Report.....	13

Contact Details

24 Heath Drive

Tree Condition Survey

Ecologist's Details

Company Name	Eight Associates
Company Address	Ground Floor, 57a Great Suffolk Street, London, SE1 0BB
Contact Name	Rachel Crookes
Contact Telephone Number	020 7043 0418
Ecology Report Reference	2349 - 24 Heath Drive - Tree Condition Survey - 1707-21rc.docx

Developer Details

Company Name	The Estate Office
Company Address	32-38 Scrutton Street, London, EC2A 4RQ
Contact Name	Sebastian Potiriadis
Contact Telephone Number	020 7490 8100

Development Details

Development Name	24 Heath Drive
Development Address	24 Heath Drive, London, NW3 7SB
Development Description	The project consists of the refurbishment and extension of a listed residential building in the London Borough of Camden.

Introduction

24 Heath Drive

Tree Condition Survey

Introduction

Eight Associates have been instructed to carry out a tree condition survey utilising non-invasive stress wave tomography, to establish the internal structural condition of wood tissue relating to a Cherry tree to the rear of 24 Heath Drive, London, NW3 7SB.

Jason Mills, an experienced arboriculturalist, carried out a tree condition survey on the 12th July 2017 using non-invasive stress wave tomography to assess the tree's current status. This report describes the findings of the survey, performs a risk assessment for the tree and gives recommendations for management actions.

Tree Preservation Orders (TPO) and Conservation Areas (CA)

From email and telephone correspondence with London Borough of Camden it is understood that 24 Heath Drive falls within a Conservation Area. As such any works required to be carried out to the tree would require notification to the Local Authority of intended works to which they would have 6 weeks to respond.

All information should be checked by the client or contractor prior to undertaking any tree work.

Description and General Aspects of the Site

The Cherry tree is located within the rear garden, in close proximity to the southern (right hand) boundary. The site is flanked by similar properties and gardens.

The site slopes from east down to the west.

Please see Appendix 1 of this report for photos of the tree in question.

Visual Tree Assessment 24 Heath Drive Tree Condition Survey

Visual tree assessment:

All dimensions and measurements are estimated unless otherwise indicated

Tree no. and Species:	T14 Cherry
Position within the Landscape:	The tree is located within the rear garden. The tree is surrounded by tall buildings to the north and west and trees to the north and east which obstruct and constrain views of it, especially from the highway of Heath Drive.
Surrounding environment:	The tree is located in soft ground; there are several overgrown small trees, shrubs, bramble and nettles to the north and east and a timber boundary fence to the south.
Targets:	Targets include people accessing the gardens at No24, the neighbouring garden to the south and the Conservatory structure located at the rear of the neighbouring dwelling.
Height:	15m
Stem diameter	(at 1.5m from g/l): 590mm
Crown Spread:	9m
Age Class:	Mature
Condition of root system:	No excavations were made within the root plate area. The topsides of the exposed structural roots on the south side of the stem (in neighbouring property) have direct damage wounds; the related decay appears relatively minor and is surrounded by evidence of response growth.
Basal Condition:	Inspection of the basal zone revealed some minor wounds but no significant defects. Sounding of the stem base returned a solid sound which did not suggest the presence of any significant underlying decay.
Condition of stem:	There is a large wound and related cavity on the south-west side of the main stem at approximately 1.7 metres above ground level. The cavity is 350mm wide and 400mm tall at the mouth of the opening and is flanked by extensive response growth at the margins. The main part of the cavity is approximately 150mm deep and the decayed wood behind can be probed 100mm with a metal spike. There are further smaller and less significant wounds extending up the main stem from 3 to 8 metres.
Condition of crown structure:	The crown of the tree has been significantly pruned in the past; it has been topped between 9 and 11m and lower branches removed to raise the crown to improve access/ provide more space. The crown contains approximately less than 5% minor deadwood. The attachment of the re-growth at the previous topping wounds will be inherently weak, but when viewed from ground level the related branches do not appear to be unstable.
Condition of foliage and shoot growth:	The tree displays reduced vigour and the foliage is comparatively sparse.

Tree Inspection Results

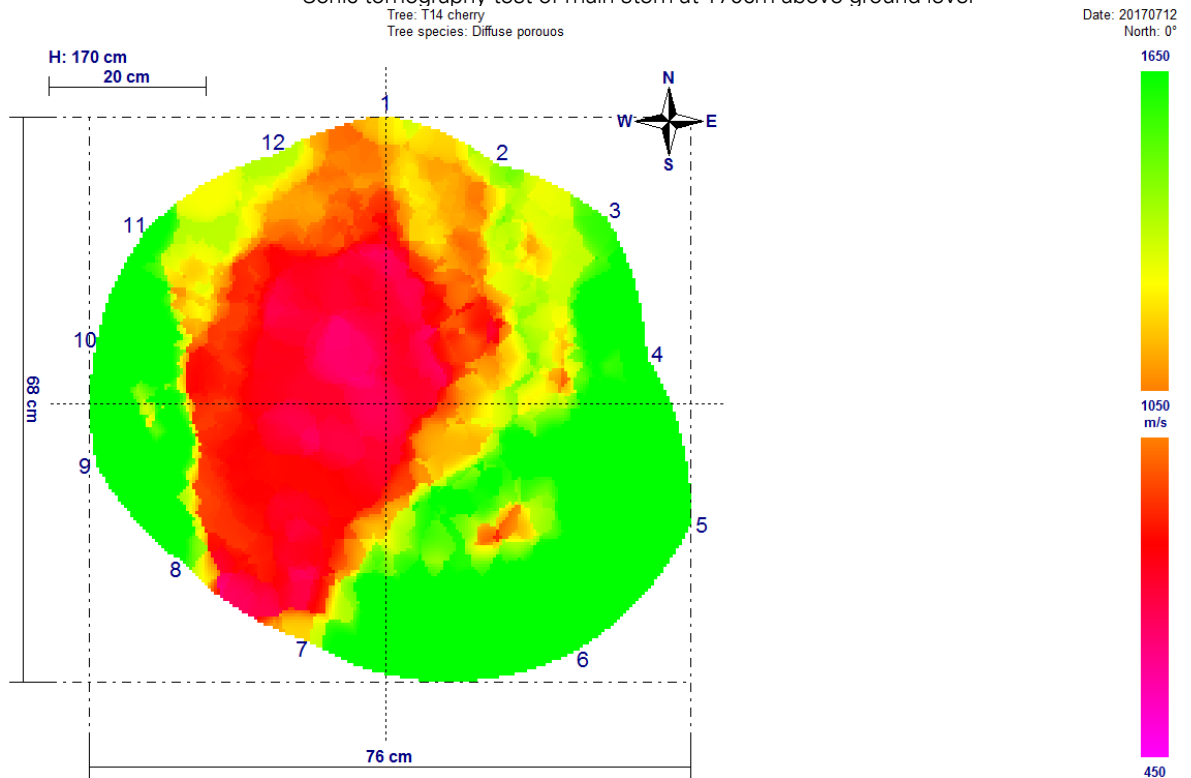
24 Heath Drive

Tree Condition Survey

Structural condition of main stem

The Stress-wave ('sonic') tomogram of the main stem identifies decayed or compromised wood as areas in purple/red; those areas with strong and intact wood structure are identified in green and partially damaged wood in yellow and orange.

Sonic tomography test of main stem at 170cm above ground level



The Stress-wave ('impulse') tomogram of the main stem at 170cm above ground level in the location of the wound cavity reveals a central zone of decayed/ damaged wood (purple and red colours) and partially decayed wood (orange and yellow). Solid wood is shown in green. The decayed/ damaged wood extends into the stem to the north. The residual wall adjacent to sensors 1, 2 and 12 is shown to be thin.

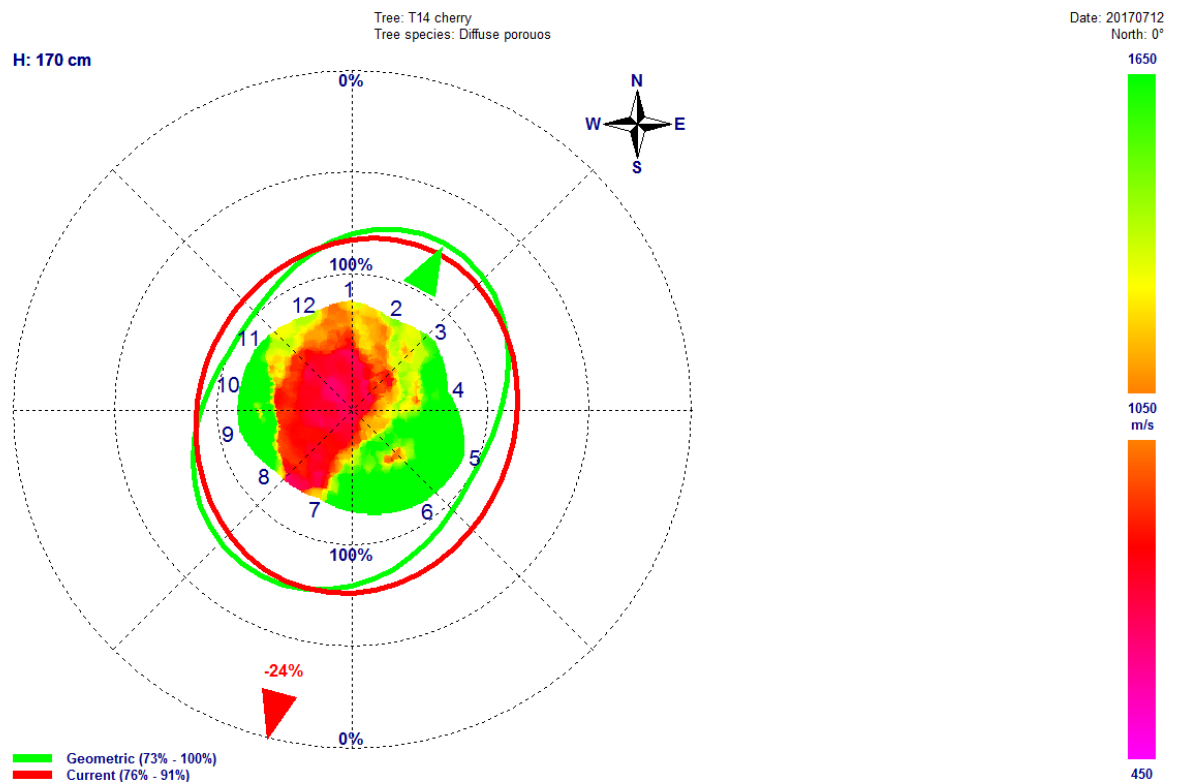
Tree Inspection Results

24 Heath Drive

Tree Condition Survey

Structural condition of main stem

Calculated mechanical strength loss in location of tested 170cm above ground level



The section modulus calculation (indicated by the red ellipse on the graph above) of the decayed/ damaged wood records a loss in load carrying capacity at the testing level of approximately 25% for winds coming from the north-east and south-west.

Tree Inspection Results

24 Heath Drive

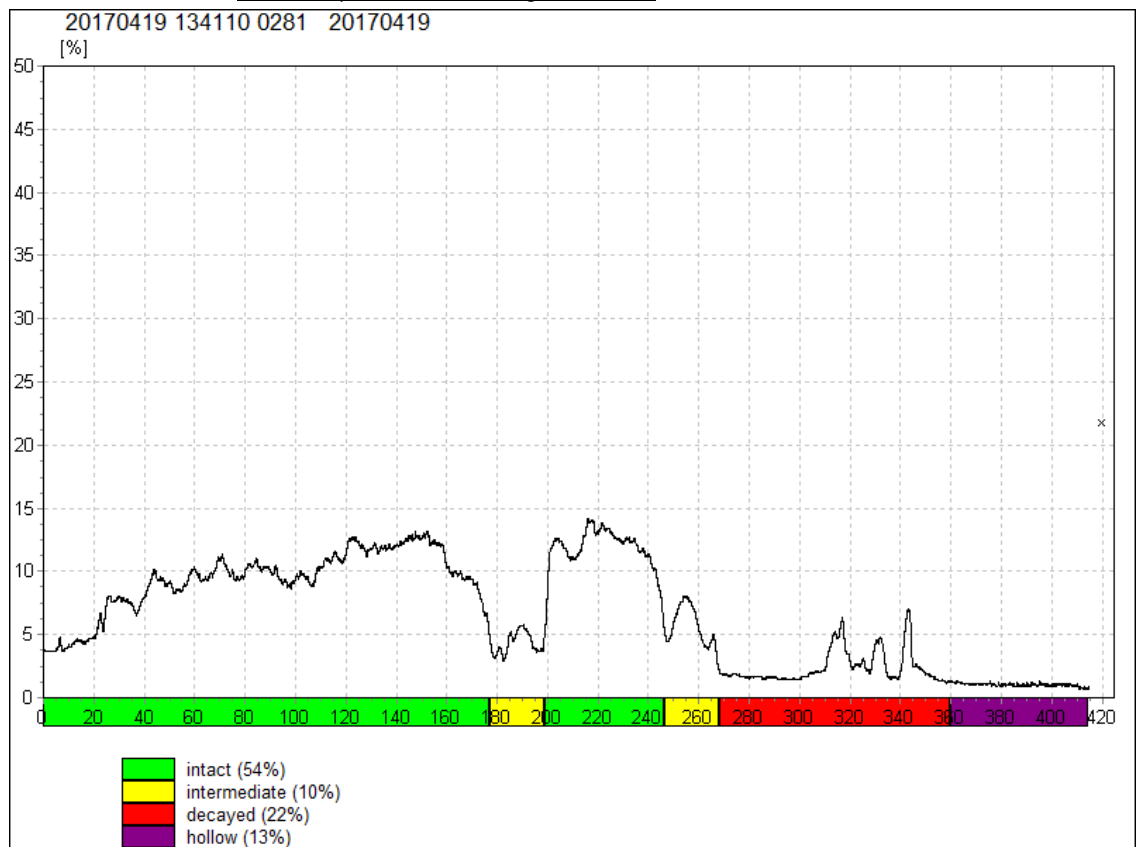
Tree Condition Survey

Resistograph Testing Results

The Resistograph provides a high resolution, electronically controlled drill resistance measurement of wood. It is used to detect defects such as decay, cavities and cracks and also to determine wood quality.

A resistograph test was carried out adjacent to sensor 1 at 170cm above ground level, drilling toward the centre of the stem to corroborate the thin residual wall indicated by the tomogram.

T14 Cherry at 170cm above ground level.



The above test shows that the residual wall, indicated by the intact wood (green) and intermediate wood (yellow) to be only 9cm thick. The thin remaining wall of wood correlates with the tomogram carried out. The test records progressively reducing resistance between 7cm (in the intermediate wood) and 10cm (in the decayed wood) indicative that there is not a strong reaction zone.

Consideration of Findings

24 Heath Drive

Tree Condition Survey

Consideration of structural integrity and remedial tree works.

The sonic tomography testing of the stem has recorded a strength loss of approximately 25% in the zone of the wound at 1.7 metres above ground level. The extent of strength loss is not insignificant. An option to return the tree to an acceptable safety factor would be to reduce the wind-sail of the crown and in-turn the loading on the weakened section of stem. However, this is not considered to be the expedient option for the following reasons;

1. A fungal bracket, thought, most probably to be that of Chicken of the Woods was previously observed attached to the wound at 1.7 metres. Cherry is a recorded host of the fungus. Chicken of the Woods causes a brown rot in which cellulose is decayed, leaving the lignin intact and as a result the wood brittle. The tree is prone to failure when a large proportion of the wood is decayed. Of concern is the thin residual wall of the stem on the opposite side to the wound and the weak compartmentalisation of the progressing decay
2. The wound at 1.7 metres is flanked on both sides by extensive response growth/ wound wood forming 'rams horns', so called because of the shape produced when the new wood and bark rolls over into the cavity opening. The 'rams horns' form in response to the wound and provide additional strength to the structure. However, because the new wood is rolling inwards the cavity will not occlude and cover over; thus, the wood at the face of the wound will remain exposed. Of additional concern is that the contact pressure of the 'rams horns' on the inside of the stem can be so high to cause longitudinal cracking, the presence of which would potentially remove the additional strength they provide.
3. A reduction of the crown, sufficient to reduce the loading on the weakened section of stem would significantly reduce amenity value.
4. An appropriate crown reduction would form relatively large wounds, which would expose wood to potential further colonisation by pathogens.
5. The tree has reduced vigour and further removal of photosynthetic material would weaken it further, reducing its ability to counteract decay by laying down new wood.

Risk Assessment and Recommendations

24 Heath Drive

Tree Condition Survey

Discussion of Risk

Risk has been assessed using the International Society of Arboriculture's (ISA) Tree Risk Assessment Methodology, referred to as TRAQ. This is a qualitative system, which uses a matrix-based combination of ratings to reach a conclusion of associated risk.

Risk is the combination of the 'likelihood' of an event and the severity of the potential consequences. A hazard is a likely source of harm and this case relates to the tree or part of a tree that may fail.

The likelihood of failure considers all structural defects noted within the tree. The overall risk rating for the tree is derived from the tree part presenting the greatest risk.

Likelihood of failure and impact	Consequence of failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Using the matrix above, within the next three years, the Cherry tree has been currently attributed a moderate risk rating with regard to people and property.

Recommendations

It is advised that the work should be carried out by a contractor from the local authority list.

The contractor should carry out all tree works to BS 3998 Recommendations for Tree Work (2010) and as modified by more recent research.

Recommended works in relation to structural condition	Time scale
Fell to ground level	Within 6 months of this report

Appendix 1: Photos

24 Heath Drive

Tree Condition Survey



Photo 1: T 14 Cherry as viewed from the north



Photo 2: Showing sensors attached to stem at 170cm above ground level in zone of wound.

Appendix 1: Photos

24 Heath Drive

Tree Condition Survey



Photo 3: Showing sensors attached to stem at 170cm above ground level, south side



Photo 4: Showing multiple wounds on the main stem between 2m and 5m above ground level.

Appendix 2: Limitations of the Tree Condition Report

24 Heath Drive Tree Condition Survey

Limitations of the tree survey

The survey was based on visual observations and aids as detailed within the report. A climbing inspection was not carried out. No below ground inspections were carried out. All observations were made from within the boundaries of the property, or from public land unless otherwise stated. Trees within neighbouring property are inspected as closely as is reasonably possible from within the boundaries of the property or from public land.

This report focuses on the physiological and structural condition of the tree as identified within this report.

Findings of the Survey and the Report

The recommendations in this tree report are valid for one year. Independent data, where provided, has not been checked unless otherwise stated. This may affect the validity of the report and the client should satisfy themselves that any independent data provided is valid.

The tree/trees in question are evaluated using both visual tree assessment and stress wave tomography. The information pertaining to the 'Arbotom'© Stress wave ('impulse') Tomography correlates to those details as provided by the manufacturers.

Displayed information and interpretation of the Impulse Tomography

Defects within the wood, not necessarily detrimental to structural integrity of the tree, may show up as areas of decay. Such areas, for example bark, cracks or stress fractures, may appear on the read out as decayed areas.

Such areas can only be verified by boring into the tree. This is only considered having discussed with the owner of the tree and maybe deemed necessary before felling the tree.

Timing of the Survey and the Report

Such considerations/recommendations will become invalid if changes occur to the site that affect the condition of the tree, the site as evaluated or the hazards as identified at the time of the survey. If there are any such alterations, it is recommended that a new tree survey/report is undertaken.

Assessment of 'Targets' as considered

'Targets' are considered as those things, people and property that could be hit by the trees failing, whether such failure is partial or total.

These Targets are identified from an evaluation of the site at the time of the survey. Changes to the site from the time of the survey may affect the targets as considered within the report and will require review or re-appraisal of the report.

Consideration of the Trees in Relation to Subsidence/ Heave

The report does not consider an assessment of the risk of Subsidence or Heave to any properties, built structures or drainage whether within the bounds of the site considered or adjacent to the site.

It is considered prudent to consider the effects of heave on any property if trees are removed. Such considerations would be considered within a specific report.

Appendix 2: Limitations of the Tree Condition Report

24 Heath Drive Tree Condition Survey

Consideration of the Trees in relation to direct damage

The report does not consider direct damage related to tree root growth in relation to any structures whether within the bounds of the site considered or adjacent to the site.

Direct damage in this instance is considered to be where the roots of a tree have physical contact with a structure.

Trees in relation to other properties

Works as recommended may affect third party property owners and/or third party trees. Considerations of these affects are not dealt with within this report.

This report/survey does not comment on possible effects of trees on neighbouring properties, including in relation to subsidence or heave, or with regard to possible hazards presented by trees surveyed.

Third party owners that maybe affected by recommended works and should be informed by the client, so that the relevant parties may seek their own advice as to possible effects of the recommendations given within this report.

Damage to, or possibility of damage to, any other structure that is not referred to within the report is not considered unless otherwise specified. This includes both neighbouring structures and any other structure on the property.

Trees subject to statutory controls

It has not been established whether or not any of the trees mentioned within the report are covered by any statutory controls. This can be done if requested.

If the trees are covered by a Tree Preservation Order or are located in a conservation area it will be necessary to consult the local authority before any pruning works, other than certain exemptions, can be carried out.

The works specified above are necessary for reasonable management and should be acceptable to the local authority. However, tree owners should appreciate that the local authority may take an alternative point of view and have the option to refuse consent.

Trees are subject to changes outside man's control

Trees are living organisms subject to changes outside man's control. Trees and environment alter with the seasons it is as well to inspect trees whilst in full leaf and when out of leaf.

If there are any harsh or unexpected weather conditions, or heavy storms it is also prudent to inspect trees.

Changes to ground water conditions will affect the root growth of a tree. Such changes are not always the result of man's influence and others factors may be involved.

Limitations of use of copyright

All rights in this report are reserved. Its content and format are for the exclusive use of the addressee in dealing with this site. It may not be sold, lent, hired out or divulged to any third party not directly involved in this site without the written consent of Eight Associates Ltd.