Internal Decay Assessment

Client: Spiraline Ltd

Site: West Hill Court

TCTC-18940

September 2023

Introduction

Terms of Reference

Tracy Clarke Tree Consultancy Ltd are instructed by Spiraline Ltd to carry out an Internal Decay Assessment to determine whether or not T12 (shown on the plan at Appendix A) is within safe parameters regarding its structural integrity.

The site was visited on 26 September 2023

The Site

The site address:

West Hill Court

Millfield Lane

London

N6 6JJ

The Local Authority: London Borough of Camden

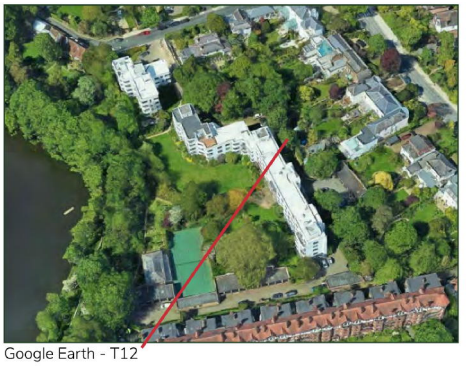
Summary of Assessment

The horse chestnut tree T12 is not currently within safe parameters

A crown reduction is required to mitigate the risk of failure (see Appendix B for details).

A re-assessment of the extent of decay at 1.2 metres should be carried out in 3 years

Tree Location


Google Earth - T12

Method of Assessment

Initially a Formal Inspection of the tree is carried out . This follows a structured process called Visual Tree Assessment (VTA). The tree is inspected from ground level, the health of the tree assessed, and any obvious defects identified.

This assessment also determines whether the tree is suitable for a Stability Assessment.

The tree is recorded, and if it shows a defect that requires remedial action, prioritised recommendations for work are given.

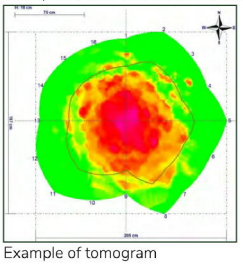
If no work is required, this is specified.

The following data is collected:

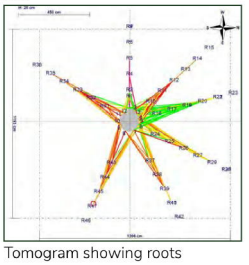
- Tree will be plotted individually using tree survey mapping software
- The position of tree is estimated using GPS
- Tree reference number
- Tree tag number (the tree may be tagged if one does not exist)
- Species
- Estimated height (m)
- Estimated stem diameter (cm) measured at 1.5m above ground level
- Estimated crown spread diameter (m)
- Life stage
- Physiological condition
- Structural condition
- Notes and observations of defects
- Recommended works
- Bat Roost Potential
- Works will usually be prioritised to within – Immediate / 7 days / 3 Months / 6 Months /1 Year

THREATS (Tree Hazard:Risk Evaluation and Treatment System) method

Using tomography we are able to 'map' the decay using non invasive methods. Stress waves travel through sound wood faster than dysfunctional wood. Sensors placed around the tree allow us to measure the time it takes an impulse to travel through the wood and reach the other sensors, so we get an impression of the internal condition of a tree.



Example of tomogram



Tomogram showing roots

There are occasionally circumstances where tomography is not suitable, such as assessing decay present in buttress roots. In these situations we use the Resistograph which is a very fine drill that measures resistance as it travels through the wood. It provides graphical information on the internal structure of the tree at the points of drilling. Usually decayed wood has a lower resistance and the results of drilling combined with our knowledge and experience allows us to provide evidence based recommendations for the tree.

Resistograph read out

Mature Oak tree with Arbotom sensors around the stem

Scope and Limitations

The tree has been inspected from ground level only applying Mattheck's (1994) Visual Tree Assessment method (VTA)*.

Recommended timing of works may be prioritised with guidance from the THREATS system of risk evaluation and treatment**, and by following the guidance produced by The National Tree Safety Group's report 'Common sense risk management of trees' (2011)***.

Tree positions are approximate only.

Observations and recommendations of the tree in this report do not allow for extreme weather events. It is recommended that a High Winds Policy is developed to manage Tree Risk during storms.

The tree should be inspected following storms and extreme weather events to identify any damage or changes in condition of the tree that may have occurred.

All recommendations are given in the context of the site's current use.

Trees are dynamic living organisms, and subject to changes in their condition. They are susceptible to effects from disease, weather and changes to their surrounding environment.

The assessment of the tree within this report is valid for one year from the date of inspection.

---

*Mattheck, C.,Broeler, H. (1994). The body language of trees.A handbook for failure analysis– Research forAmenity TreesNo.4 Research for Amenity Trees

**Forbes-Laird, J, L (2009) TREE HAZARD: RISK EVALUATION AND TREATMENT SYSTEM -THREATS

***NTSG (2011): COMMON SENSE RISK MANAGEMENT OF TREES (Forestry Commission, Edinburgh)

Best Practice

Any works recommended will have been given a priority - a timescale that the works need to be carried out. However, where possible within these timescales it is beneficial to the tree if major works are undertaken during periods of lower functional activity. This may be during the winter when the tree is dormant (November to end of February), or during late July to the end of August when the tree is less active. During these periods the tree is better able to react to wounding and a decrease in leaf area.

It should be noted that during July and August there are potential implications regarding protected species - see next section: Legal Status.

All tree works should comply with BS3998: (2010) Tree Work - Recommendations.

Arborists carrying out the work should be suitably qualified and insured

Legal Status

No details have been requested from the Local Planning Authority (LPA) as to whether the tree on the site is within a Conservation Area or protected by a Tree Preservation Order (TPO), although it is understood that trees are protected by a TPO.

Prior to any works to prune or remove a tree within a Conservation Area or protected by a TPO written consent from the LPA is required.

Care should be taken in regard to species and their habitats that are protected under the Wildlife and Countryside Act 1981, the Countryside and Rights of Way Act 2000 (CRoW Act) and the consolidation of the Conservation of Habitats and Species Regulations 2010 (the 'Habitat Regulations 2017').

With tree work this particularly refers to birds and bats.

Ideally, if possible, work should be undertaken outside of the bird nesting season (March to September).

A scoping survey that identifies Potential Bat Features (PRF's) and the likelihood of a tree being used by bats is included as part of the Visual Tree Assessment. This survey follows BS8596: (2015) Surveying for Bats in Trees and Woodland - Guide. Trees are rated as Negligible / Low / Medium / High / Confirmed.

A Negligible or Low rating means that no further action is required, and works can be carried out on the tree.

If rated as Medium, tree surgery works should only proceed with caution, with the arborist following best practice.

If rated as High, a Secondary Survey should be carried out to confirm or discount the presence of bats.

If Confirmed, either from the Scoping Survey or Secondary Survey, a Natural England European Protected Species Licence will be required, and a Licensed Bat Worker must be contacted and involved in the process.

Discussion

T12 (Image 1) is a mature but relatively compact horse chestnut. Following a Visual Tree Assessment in August 2023 a Detailed Assessment was recommended for two areas of concern, A large cavity and area of decay on the main stem and the limb unions at 6 metres as the whole crown appeared to be as a result of an historic severe pollarding which may have resulted in decay at the 'bolling'.

The cavity on the north side of the stem from 0.2 to 1.8 metres has good reaction growth on both sides of the cavity (Image 2) but the decay is extensive - the mechanical strength loss is significant at 24%.

Tomography was carried out at ground level to determine if the decay had progressed down the stem - decay in this area was negligible.

The tree appears to have been pollarded historically - this is now lapsed and the existing crown too large to be considered in cycle or to respond well to re-pollarding. The 'bolling' at 6 metres is in remarkably good condition in regard to the extent of decay, however the stem unions of the crown at this point will be inherently weak as they originate from epicormic growth (image 3).

The unions where the stems originate from the main stem at 6 metres will be weak, despite the current lack of decay at this point, and so the crown should be kept compact to mitigate this. However, as any potential pollard cycle has now lapsed, re-pollarding is not recommended as this will lead to future issues of accelerated decay (if the tree survives such treatment).

The stem decay is also a potential point of failure and requires work to mitigate the risk.

The recommended works will mitigate the risk from both the stem unions at 6 metres and the mechanical strength loss at 1.2 metres. The crown reduction recommended (see Appendix B for details) reduces the wind loading on the crown by 40%. The extent of crown reduction is also minor enough to ensure the wounds are kept as small as possible and it will be possible to prune back to live growth points - this means that resulting decay and the production of epicormic growth will be minimal.

Image 1 - T12

Images

Image 2 - T12 Stem

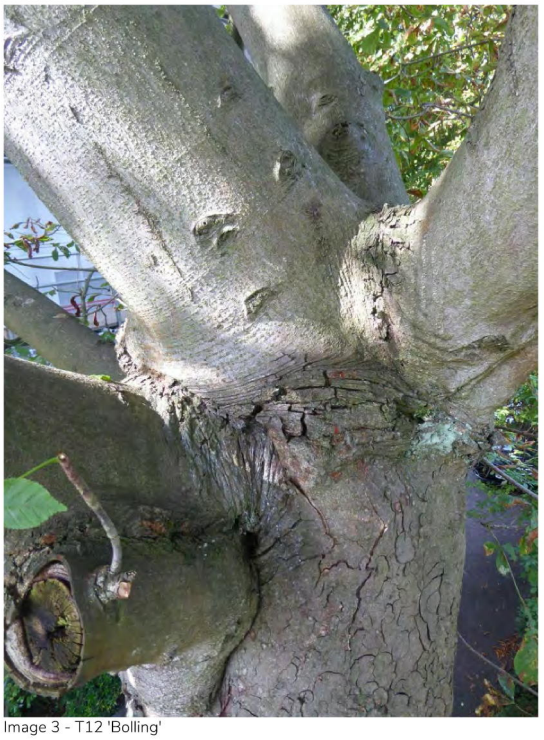
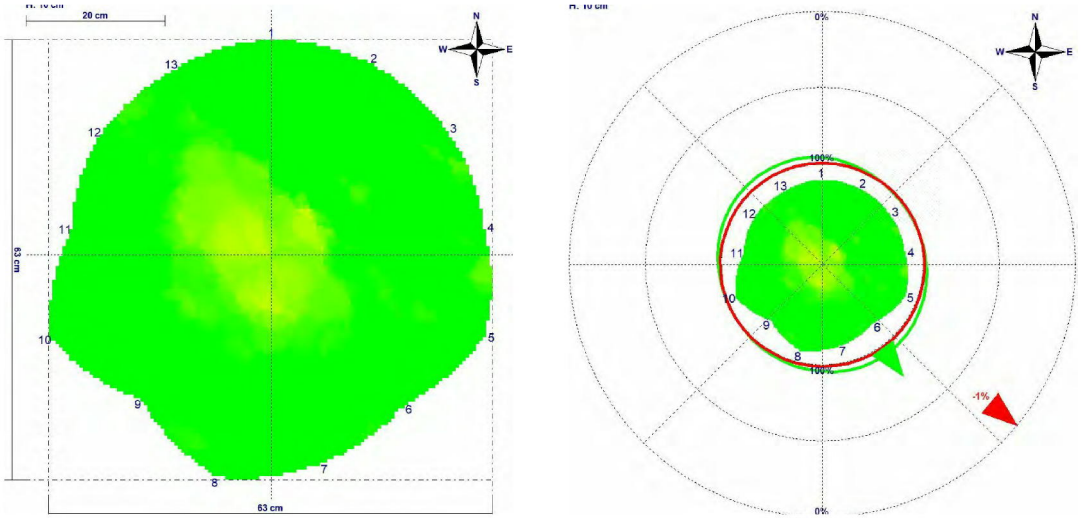


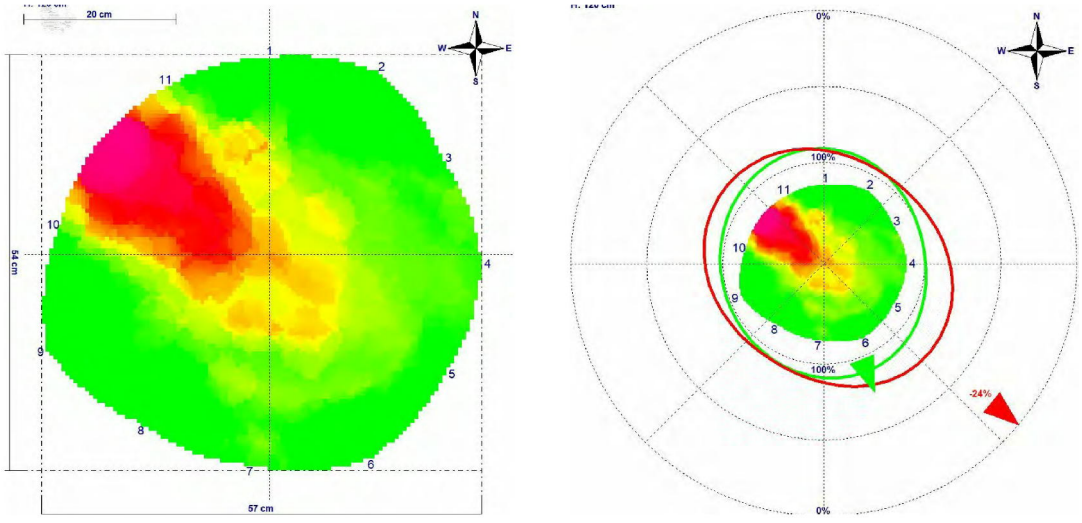
Image 3 - T12 'Bolling'

Internal Decay Assessment - T12 at ground level



Tomography at ground level shows decay is negligible

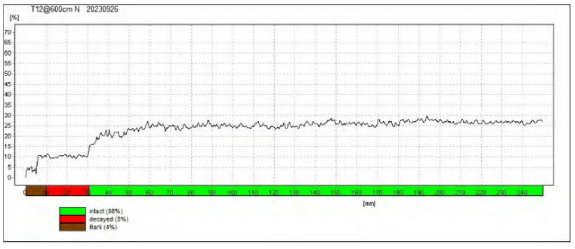
Internal Decay Assessment - T12 at 1.2 metres



Decay at 1.2 metres is extensive - the mechanical strength loss is increased as the decay has breached through functional wood and created an open cavity.

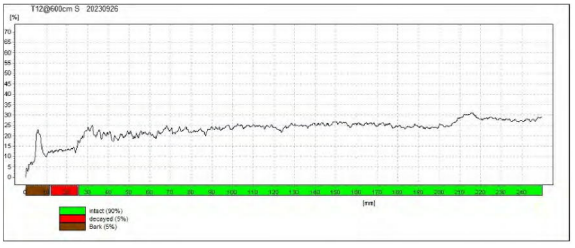
Mechanical strength loss of 24% is significant and there is a risk of failure.

Internal Decay Assessment - Resistograph - T12 at 6 metres



Resistograph readings taken at 6 metres just below the crown break / 'bolling'.

Both readings from north and south sides of the stem show no internal decay.



Tree Survey Results

Tree Data

Tree survey data can be found in the following appendices:

- Tree Survey Plan - Appendix A
- Tree Schedule (inc, notes and recommendations) - Appendix B

Issued separately and in addition to this report to facilitate organisation and implementation of works:

- Tree Survey Plan
- Tree Schedule (in .XLS format to enable filtering of priorities, and has an additional column to record date work is completed).

Recommendations

The usage of the site is High.

It is recommended that the Internal Decay Assessment at 1.2 metres is repeated in 3 years

Prioritised tree works can be found in the Tree Schedule - Appendix B

Appendix A - Tree Survey Plan

TRACY CLARKE
TREE CONSULTANCY

01371 811831 info@tracyclarke.co.uk www.tracyclarke.co.uk

North

Key

- Works within 7 Days
- Works within 1 month
- Works within 3 months
- Works within 6 months
- Works within 1 year
- Works within 2 years
- No work required

0 5m 10m 20m 30m

Date	Revision	Description
---	---	---

Title
Tree Risk Survey

Client
Spiraline Ltd

Site
West Hill Court, N6 6JJ

Dwg Ref: TCTC-18940-RA-01	**Rev:** -	**Scale:** 1:500 @ A3
Status: Risk	**Date:** Sept 2023	**Drawn By:** AC

Do not scale from this drawing, tree positions and dimensions should always be checked on site.

The original of this drawing is in colour, do not rely on monochrome versions.

Appendix B - Tree Schedule

Detailed Assessment Tree Schedule and Recommendations

TRACY CLARKE TREE CONSULTANCY

Site: West Hill Court

Date: September 2023

Tree / Group No.	Tag Number	Species	Number of Stems	Height (m)	DBH (cm)	Crown Spread (m)	Bat Potential	Vitality	Age Class	Physiological Condition	Structural Condition	Targets	Notes and Observations	Recommended works	Priority
T12	Not tagged	Aesculus hippocastanum (Horse Chestnut)	1	12	58	10	M	High	Mature	Good	Poor	Building within falling distance of tree Road within crown spread	UPDATED FOLLOWING DETAILED ASSESSMENT: Cavity on north side of stem from 0.2 to 1.8 metres - good reaction growth on both sides of cavity but decay is extensive - mechanical strength loss is significant The tree appears to have been pollarded historically - this is now lapsed and the existing crown too large to be considered in cycle or to respond well to re-pollarding. The 'bolling' at 6 metres is in remarkably good condition in regard to extent of decay however the stem unions of the crown at this point will be inherently weak as they originate from epicormic growth.	Reduce crown by 2 metres in height - target prune back to live growth points. Reduce lower crown by 2 metres in spread, and upper crown by 1 metre in spread - target prune back to live growth points	6 months

Appendix C - Definition of Terms

Tree / Group / No:	Identification reference T= individual tree, G = groups of – this is the number shown on the Tree Survey Plans	
Tag Number	Number stamped on tag that is nailed to tree to identify it, enabling certainty when carrying out recommended works by cross referencing with T or G number on plan	
Species:	Botanical and Common name	
Height:	Estimated height of tree in metres (to the nearest m)	
DBH:	Estimated stem diameter taken at 1.5m above ground level, in centimetres	
Crown Spread:	Estimated crown spread averaged over the four cardinal points N, E, S, W	
Vitality *(dynamic characteristic)*:	**Normal**	Normal growth for the species in its environment
	Moderate	Below normal growth for the species in its environment
	Poor	Sparse / weak growth for the species in its environment
	Dead	A dead tree, no live growth, cannot be considered a veteran tree despite size
Age Class	**Young (Y)**	A small tree that has been recently planted, or an establishing tree naturally self-sown in the very early stages of growth for its species
	Semi mature (SM)	An established tree in the first third of the life span for its species with significant growth potential
	Early mature (EM)	Tree in the second third of the life span for its species, with some growth potential but is less vigorous / slowing down
	Mature (M)	Tree that has reached its optimum crown size and growth potential for its species, in its last third of expected lift span for its species
	Over mature (OM)	Declining tree, and / or approaching the end of its natural lifespan for its species,
Physiological condition	**Good**	Generally good healthy specimen for the species, full, healthy crown density, normal extension growth, foliage colour and size normal, limited deadwood, functioning well and able to adapt well to its environment
	Fair	Showing minor signs of decline, slow extension growth, possibly yellowing leaves, numerous deadwood present
	Poor	Trees with poor crown density for its age and species, small developed leaves, limited extension growth, generally functioning poorly, in decline, major deadwood present
Structural condition	**Good**	A tree showing no adverse risk of failure, minor defects or weak characteristics, with little overall significance
	Fair	A tree with defects that may require works to remove or improve the defect
	Poor	A tree with major structural defects, unlikely to return to a good structural condition following remedial works, may have significant decay, cavities, cracks, splits
Deadwood	**Twigs**	Diameter up to 10mm
	Minor	Diameter 10-50mm
	Major	Diameter >50mm
Site factors	Common site factors that should be considered that may influence the likelihood of tree failure	
Target	People or property at risk from the tree / groups	
Priority for works	A = immediate, D7 = within 7 days, M1 = within a month, M6 = within 6 months, Y01 = within 1 year, Y02 = within 2 years, Y03 = within 3 years, Y05= within 5 years *Guided by THREATS (Tree Hazard: Risk Evaluation and Treatment System) method to guide my recommendations and prioritisation for works. For further information on this method please refer to* http://www.flac.uk.com/wp-content/uploads/2010/07/THREATS-GN-June-2010.pdf	

Appendix D - Qualifications

Ade Clarke, a qualified arboriculturist with extensive experience spanning thirty years working with trees. Areas of expertise include tree risk, ancient tree and woodland management.

An experienced tree surveyor managing tree risk at various levels - from surveying to managing policy and procedures as well as delivering training to surveyors and to those responsible for the management of tree populations.

Ade has been involved with ancient trees since 1992, and over that period has experience of every aspect of ancient tree management, from practical hands-on management, surveying, contract management, the management of ancient trees in relation to risk, and finally strategic responsibility for one of Europe's most important ancient tree populations.

Over the last few years, Ade has also specialised in the very detailed analysis of tree condition and structural integrity with the use of tomography, aerial tomography, and stability assessments. With this specialist equipment and the analysis of the additional data it provides, we are able to determine more refined safety factors that often enables the retention of the most valuable trees in high target areas that otherwise may be removed or have inappropriate tree surgery carried out due to the perceived risk.

Ade Clarke is a Chartered Forester, a Registered Consultant and Professional Member with the Institute of Chartered Foresters, and a Professional Member of the Arboricultural Association.

Ade Clarke MICFor. MArborA

Institute of Chartered Foresters
Registered Consultant

Arboricultural Association
Professional Member

[redacted]

01371 811831

Head Office:
5 High Street
Great Bardfield
Essex
CM7 4RF

TRACY CLARKE
TREE CONSULTANCY