Tree survey at xxx.

Prepared for xxx.

15th October 2013

Revision 1: Insertion of TPO details. 28th October, 2013

Dr. R. J. M. Wilson BSc. (Hons), PhD., Dip. Arb. (RFS), M. Arbor. A.

Professional member of the Arboricultural Association

Associate Member of the Institute of Chartered Foresters

Director.
C Trees Ltd.,
10 Angotts Mead,
Stevenage,
Herts., SG1 2NJ.

07789 696072 / 01438 232334
rjwilson@ctreesuk.com

Contents:

1.0 Summary

- Following an instruction fromxxxx I have conducted visual and sonic tomography arboricultural surveys on one English Oak tree at xxx.
- Oak tree T1 is in a fair physiological condition but bears multiple brackets of the primary decay fungus Ganoderma resinaceum and so may be structurally poor.
- Sonic tomography revealed that the absence of significant decay in the main stem suggesting that the seat of infection is in the major structural roots.
- A root collar examination should be carried out with soil excavated by air spade within 1 month.
- Work should be carried out by competent, trained and equipped specialists in accordance with the principles of BS3998:2010.

2.0 Background

2.1 Instruction:

- I have been instructed by xxx to conduct a visual arboricultural survey on one English Oak tree at xxx. A Picus survey was also required.
- The client requires an assessment of tree health & safety along with recommendations for hazard mitigation.
- The initial enquiry was received by e-mail on September 9th, 2013 and was followed by an instruction to proceed by e-mail on September 17th.
- Inspection took place on October 15th between 13:00 and 14:30 hrs, at the client's request.

2.2 Techniques used:

- Visual Tree Assessment (VTA; Lonsdale, 1999).
- Sonic tomography.
- Desk-based enquiries: TPO / CA status, geological survey, mapping.

2.3 Limitations:

- The contents are intended for the sole use of the client. No liability is accepted for their use by any other parties to advance an argument or claim (including legal or financial) without prior consent.
- No liability is accepted for defects hidden from view by vegetation or other obstacles to access.
- Formal assessment of topography, drainage, service conduits, & soil conditions have not been made and are beyond the scope of this report.
- Specific laboratory investigations of soil properties (plasticity index, moisture content, suction pressure) have not been made and are beyond the scope of this report
- This report considers only the potential for the property to be affected by the surveyed trees. No liability for damage arising from any other source or mechanism is accepted.
- It is understood that any risks associated with these limitations are accepted by the clients.

2.4 Weather conditions:

Sunny, wind force 1.

2.5 Access conditions:

Access to T1 was unhindered.

2.6 Validity:

- Plants are biological organisms and change with time. Assessment remains valid for six months from the date of inspection, or until a major storm is experienced, after which time a new inspection is required.

2.7 Background information:

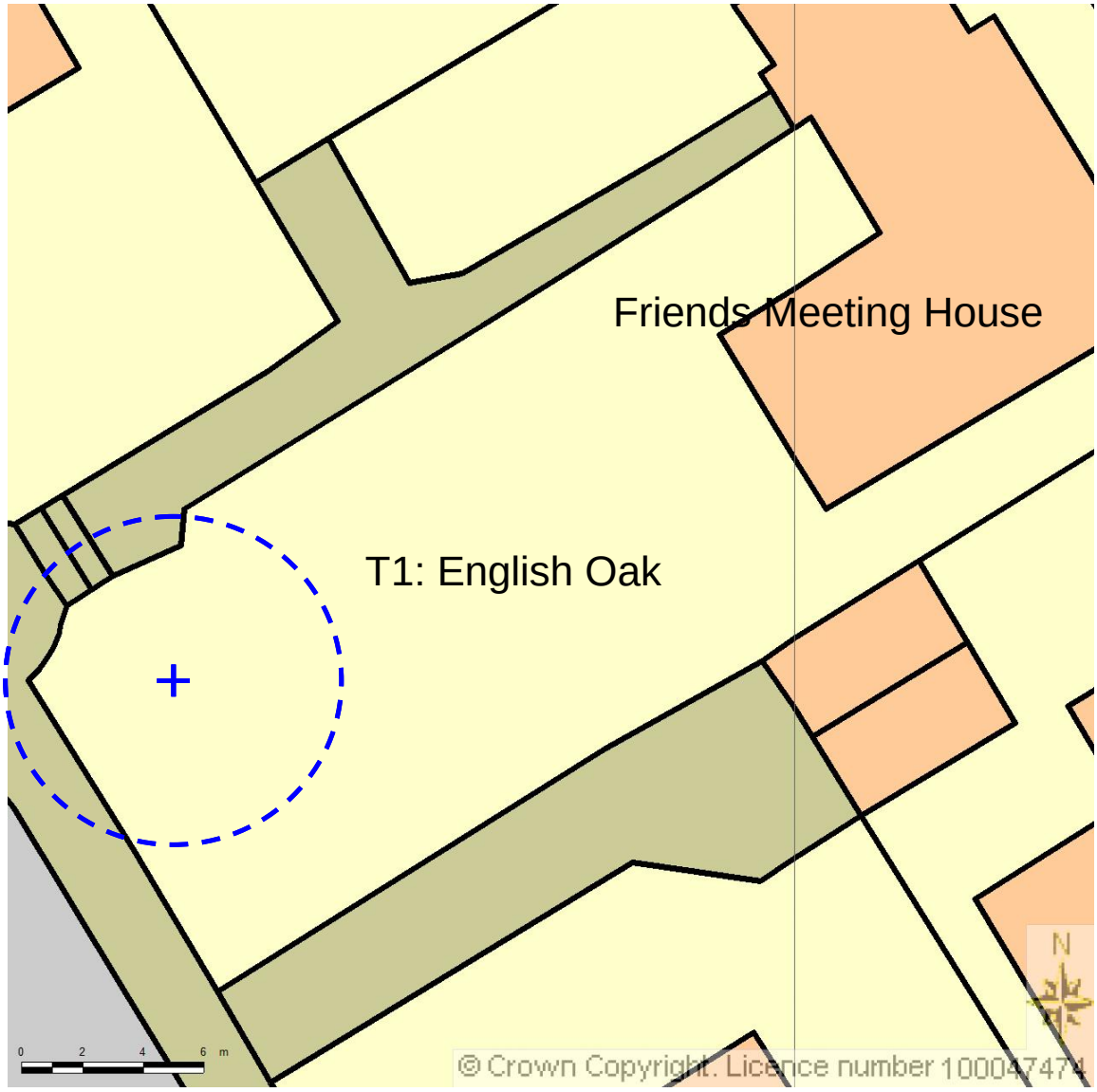
- The site lies within the xxx Conservation Area and, additionally, T1 is subject to tree preservation order TPO/xxx both of xxx.

3.0 Results:

3.1 Situation:

- The property occupies a gently sloping site at an elevation of 85m close to the low summit of xxx Hill in a suburban setting on the eastern side of xxx (Ordnance Survey Explorer Sheet 173).
- Locally, ground slopes away to the northeast into the xxx Valley, reaching 60m elevation 1km away.
- T1 is part of a small group of trees at the front of the property. Other mature oak trees line the street nearby and an area of woodland known as xxx lies immediately adjacent to the north east. Turf forms the majority of other ground vegetation.
- The setting suggests that low to moderate wind exposure is likely to be encountered but the close proximity of buildings could create turbulent airflows.
- Surface deposits are sands and gravels of the Taplow Gravel formation (BGS) over London Clay.
- Soil type is described as slightly acid loamy and clayey soils with impeded drainage and moderate fertility (LandIS).
- A tarmac road and pavement pass T1 to the west side at a distance of approx 3m; a concrete slab path runs west to east 1.5m from T1 to the north side.

3.2 Site plan:



Plan showing location of trees T1 at xxx.

3.3 Tree Assessment:

Ref. No.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)		Crown clearance (m)	Age class	Physiological condition	Structural condition	Management recommendation	Estimated remaining contribution	Category Grading
				N	8							
				E	9							
	English oak			S	9							
1	(Quercus robur)	19.5	963	W	7	2.5	M	Fair	Unknown	Root Collar Examination	Unknown	B2,3

Note: Estimated remaining contribution refers to the tree in its current state.

Category gradings are those indicated in BS5837:2012 and are based on information available at time of writing.

Age class: Y – young; EM – early mature; M – mature; OM – over mature; V – veteran

T1: English oak – visual assessment

Zone 1 – stem to 1.3m above ground and root base to 1.3m away from stem.

- Buttresses obscured by soil. Appearance of material suggests that level may have been altered by spoil deposition some time in past.
- Six large brackets of the primary decay fungus Ganoderma resinaceum present on the north and south sides of the stem between ground level and 1m above ground.
- An unidentifiable blackened bracket was observed on the ground to the south side of the tree. Shape suggestive of Fomes fomentarius.
- Light competing vegetation.
- A path of broken concrete slabs ('Crazy paving') runs west to east 1.5m away to the north side. Surface cracked consistent with tree root damage.

Zone 2 – continuation of stem to origin of living branches.

- Sites of major branch loss at 5-6m above ground. Wood decayed to produce hollows. Degree of callous formation suggests injury very long-standing (c. 15-20 years).

Zone 3 – continuation of roots to ½ drip line.

- Tarmac road & pavement passes 3.5m from tree to the west side. Surface cracked consistent with tree root damage.

Zone 4 – Branches to 1/3 length.

- Several sites of major branch loss or removal.
- Overlong limb extending to south west side over pavement.

Zone 5 – remainder of root structure

- No features observed.

Zone 6 – remainder of crown

- Heavily crown reduced in past.
- Foliage in good condition.
- Good extension growth.
- Expected amounts of deadwood.

Suitability of species for location:

In spite of the structural defects this is a significant example of the species and the decay hollows form valuable habitats. The site is relatively unexposed, with plenty of space and on a relatively productive soil type. Buildings are more than 13m away with low risk of subsidence or heave effects (Mercer, et al., 2011). Therefore this native tree species is considered suitable for the site. Climate change may reduce the availability of ground water in future years

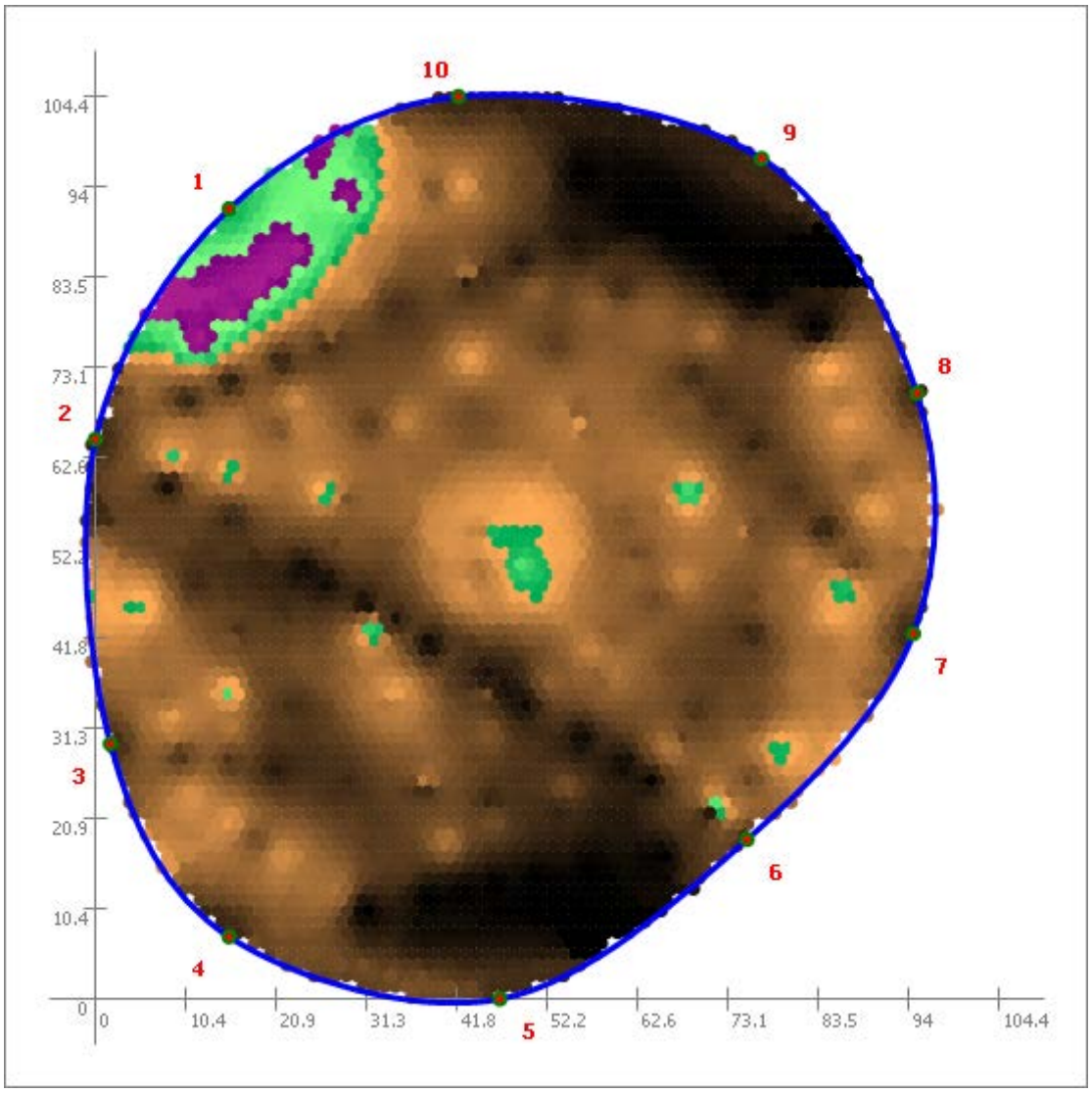
3.4 Sonic tomography

Sensor 1 is located on the North side of the stem; the sensors were arranged around the stem about 20cms above ground level on the west side of the tree.

Browns and blacks indicate sound wood of good quality.

Purples and blues indicate degraded or poor quality wood.

Green indicates wood of indeterminate quality.



- The area of decayed wood is associated with the location of the Ganoderma brackets.
- There is sufficient sound wood in the stem to support the crown of the tree.
- The condition of the roots has not been determined by this scan.

3.5 THREATS assessment (Forbes-Laird, 2006).

T1: Windthrow:

Failure – unknown.

Target – frequent vehicular traffic: 25 points.

Impact – severe >500kg: 10 points

Overall: ? x 25 x 10 = 500

Threat category = UNKNOWN.

ACTION: Investigate condition of root plate by air spade excavation and visual assessment.

Complete work within 1 month.

4.0 Discussion & Recommendations:

- The primary decay fungus Ganoderma resinaceum initially produces a selective de-lignification of wood (a white rot) followed later by an intense destruction of cellulose and other components to leave a spongy mass with no structural integrity. In the early stages of decay, wood remains tough, though malleable, and unlikely to fail but as the decay advances failure becomes more likely.
- According to Schwarze, *et al.* (2000), Ganoderma resinaceum can produce two distinct patterns of wood decay: 1. A cone of decay progressing up the main stem of the tree with its base situated down low in the root plate and its apex somewhere in the main stem of the tree (pattern typical of other Ganoderma species), or:: 2. Decay of the main structural roots only.
- Picus results show absence of significant decay in lower main stem but the size and number of G. resinaceum brackets suggests the presence of advanced decay.
- The seat of infection can therefore be expected to lie in the main structural roots creating the possibility that the tree could be destabilised in high winds (windthrow). However, the healthy condition of the crown suggests that root function has not been significantly compromised at this stage.
- Main structural roots should be examined by air spade excavation and visual assessment within 1 month.
- Excavation should be carried out by trained and certificated operatives according to the principles of BS3998:2010.

5.0 References

British Geological Survey (2013). Geology of Britain Viewer. Surface deposits & bedrock. http://mapapps.bgs.ac.uk/geologyofbritain/home.html

British Standards Institute (2010). BS3998:2010 – Standards for Tree Work. BSI Publications, London.

British Standards Institute (2012). BS5837:2012 – Trees in Relation to Construction. BSI Publications, London.

Forbes-Laird, J. (2006). THREATS: Tree Hazard Rating, Evaluation And Treatment System. A method for identifying, recording & managing hazards from trees. http://www.aie.org.uk/resources/threats/THREATS_R1.pdf

LandIS (Land information system; Soilscape viewer). Cranfield University. http://www.landis.org.uk/soilscapes2/

Lonsdale, D. (1999). Principles of Tree Hazard Assessment and Management. The Stationery Office, London.

Mercer, G., Reeves, A. & O'Callaghan, D. (2011). The Relationship Between Trees, Distance to Buildings and Subsidence Events on Shrinkable Clay Soil. *Arb. Journal*, 33 (4), 229-245.

Ordnance Survey (2010). London North. Explorer Sheet 173. 1:25,000. Ordnance Survey, Southampton.

Schwarze, F.W.M.R., Engels, J. & Mattheck, C. (2000). Fungal Strategies of Wood Decay in Trees. Springer-Verlag, Berlin Heidelberg.