

A low-angle photograph looking up at the canopy of several trees against a clear blue sky. The leaves are green and yellow, suggesting autumn. A dark, vertical pole or branch runs through the center of the frame.

**REPORT ON TREE INSPECTION AT
1 ST MARTIN'S TERRACE,
16 PAGES LANE,
LONDON N10 1QY.
AUGUST 2022**



ARBORICULTURAL CONSULTANTS

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**REPORT ON TREE INSPECTION AND DAMAGE TO BUILT STRUCTURES
AT
1 ST. MARTIN'S TERRACE
16 PAGES LANE
LONDON
N10 1QY.**

1. Introduction

1.1 Instructions

1.1.1. We are instructed to visit the above premises to inspect an Oak tree (*Quercus robur*), to report on damage to the driveway and garden walls of the property, and to consider the potential influence on the adjacent residential buildings. We have been instructed to consider the cause of the current damage and to make recommendations to minimize any future damage where appropriate.

1.2 Background Information

1.2.1. The owners of the Oak tree have noted damage to the concrete driveway and garden walls and are concerned that this is due to the roots of the tree. In addition, there is damage to the off-street parking area and floor slab of the extension at the neighbouring property at 14 Pages Lane.

1.2.2. This report is based on the best information available to us at the time of writing; we are unaware of any current structural defects to this property, or of any investigation into any such problems.

1.2.3. Care has been taken to obtain all information from reliable sources, and all data has been verified where possible. However, no guarantee can be given of the accuracy of information provided by others.

1.3 Documentation & Drawings

1.3.1. No documents or drawings were provided.

1.4 Underground Services

1.4.1. No assessment of the possible effects of tree roots on under ground services has been made.

1.5 Disclosure of Interests.

1.5.1. We have no connections with any of the parties involved in this case which could influence the opinions expressed in this report.

1.6 Tree Preservation Orders and Conservation Areas

1.6.1. The Town and Country Planning (Tree Preservation) (England) Regulations 2012 allows for trees either as groups, or individuals, or as woodlands, to be protected by Tree Preservation Orders (TPO). These have the effect of preventing the cutting down, topping, lopping, uprooting, wilful damage or wilful destruction of trees except in certain circumstances, other than with the consent of the local planning authority.

1.6.2. A Conservation Area is an area designated by the Local Planning Authority as one of "special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance". Special controls exist with regard to demolition and alteration of buildings; Listed Building Consent must also be obtained for any demolition, even if the building is not itself listed. Similarly, trees are given some protection with the requirement for the local authority to be given six weeks written notice before carrying out any work on trees; this gives the authority time to decide if a TPO is necessary.

1.6.3. The property stands within the Muswell Hill Conservation Area and the Oak tree is the subject of a TPO administered by London Borough of Haringey Planning Services. Consent must be obtained before undertaking any tree works at the property.

2. Report on Site Inspection

2.1 General

2.1.1. The site was visited on 8th August 2022 by F. Critchley of Arboricultural Solutions LLP. Appropriate measurements were taken, and a risk assessment carried out. Weather conditions were clear and sunny with light winds and good visibility.

2.2 General Description of 1 St. Martin's Terrace and 14 Page's Lane.

2.2.1. 1 St. Martin's Terrace forms part of the former Sisters of Marie Auxiliatrice convent. The planning records indicate that the convent was converted into flats and a three bedroomed house circa 2000. 1 St. Martin's Terrace stands at the west end of the original property. It is a two-storey building, with the lower ground floor converted to living space. There is a lightwell at the front of the property serving the lower ground floor accommodation. The property is brick built under a pitched slate roof. To the west is a single storey side extension, this is brick built with a flat felt roof.

2.2.2. The front garden of 1 St. Martin's Terrace includes a large concrete slab driveway and parking area. There is a raised shrubbed adjacent to the front boundary of the property, this is retained by the front boundary wall and a brick built, double bond garden wall.

2.2.3. 14 Page's Lane is a semi -detached residential property adjacent to the west of 1 St. Martin's Terrace. The house is brick-built under a pitched, slate roof and has an original two-storey rear outrigger extension. The planning records indicate that the 'lean to' garage was demolished, and new rear and side extensions constructed circa 2006. The property is approximately north facing and stands approximately 0.7 metres above the driveway of 1 St, Martin's Terrace.

2.2.4. The front garden of 14 Page's Lane is paved to provide off-street parking.

2.3 Tree Inspection Protocols

2.3.1. Tree 1 (Oak) stands on the Pages Lane frontage adjacent to the boundary of the property. Data on this tree is included in Appendix 1.

2.3.2. The information contained in this report covers only those trees that were inspected and reflects the condition of the specimen at the time of inspection. No samples of wood, roots, or soils were taken for analysis.

2.3.3. The tree was inspected from ground level only and was not climbed. No invasive examination technique (such as increment boring, or internal decay detection) was carried out. As the inspection was visual only, no guarantee, either expressed or implied, of the internal condition of the wood of the tree can be given.

2.3.4. The inspection took the form of Visual Tree Assessment (VTA). This refers to the process used for identifying the condition of the inspected tree. The tree was inspected in a methodical manner. The inspection seeks to identify the presence of visual symptoms. These help the inspector identify whether remedial works are required to abate or manage any identified defect/s. The inspection focuses on the mechanical and biological condition of the tree.

2.3.5. The tree is first inspected from a suitable vantage point to assess the overall condition of the tree, canopy shape, presence of leans, previous branch failure, weak branch unions, pruning history etc.

2.3.6. The area around the base of the tree is then inspected to identify whether ground disturbance has occurred. This could be in the form of mechanical damage to roots, identifying evidence that the root system has been weakened and whether soil levels have been changed. In the event fungi are present these will be noted. An inspection of the stem and branches of tree is then undertaken from ground level to identify decay pockets, stem cracks, reactive growth of wood, further decay fungi, bark condition and many other factors associated with VTA.

2.3.6. An assessment is also made of the suitability of the tree to its location, for example, no defect may be present, but branches may be overhanging private properties or obscuring street lighting.

2.3.7. Once the assessment is made, any appropriate tree works will be noted, and the relevant re-inspection year prescribed, based on factors such as target area, tree age, species etc.

2.4. Individual Tree Comments: Tree 1 Oak (Quercus robur).

2.4.1. Refer to Appendix 1 for individual tree dimensions and comments.

2.4.2. The Oak is a very tough, large growing tree attaining heights in excess of 20 metres in the urban environment. It has a broadly oval-shaped crown, with heavy structural limbs and a medium growth rate in good conditions. It is a long-lived deciduous species, with a life potential of at least 300 years. It has a widespread natural distribution and will survive on a wide variety of soil types, but good

growth is generally limited to deep, heavy soils. British *Quercus* species have a durable heartwood and good resistance to decay following pruning. The root system is characterized as a very deep rooting system that branches off its main taproot. Over time, the taproot's prominence recedes and is replaced by numerous large lateral roots that form the main structural support for the tree.

2.4.3. Tree 1 is single stemmed at ground level, located in a shrubbed on the front elevation of the property. It is mature in age and considered to be of average condition and normal vigour (refer to photograph 1 below). The tree has the following approximate dimensions; height 15.5 metres, crown spread to north 7.2, east 6.3, south 7.8 and west 6.0 metre and a trunk diameter of 1200mm.

2.4.4. The soil levels have been raised around the base of the tree to create the raised shrubbed planter, the base of the trunk and the buttress root flare were not visible. There is a partially occluded wound at ground level on the south side of the trunk and several small, occluded bark wounds around the base. However, there was no indication of basal decay or loose bark around the basal area and sounding around the base of the tree using a nylon mallet (Thor 710 400g) returned a solid sound.



Photograph 1 showing tree 1 from west side in Pages Lane.

2.4.5. A visual inspection of the ground area around the base of the tree within the shrubbed did not locate any indication of movement at ground level or evidence that the root plate had lifted in the recent storm conditions.

2.4.6. The trunk is straight to the crown beak level at approximately 2.5 metres height. There has been some removal of large low limbs on the northeast side at approximately 2 metres height and there is a minor decay pocket in the pruning wound. There is epicormic growth on the trunk between

2 and 5 metres height that restricts the inspection.

2.4.7. The crown of the tree has been heavily reduced in the past and has recently been more sensitively managed by regular crown reduction. The tree has a generally well-furnished crown, and the leaves are of normal colouration and size. This inspection noted the presence of fungal brackets of Sulphur polypore (*Laetiporus sulphureus*) on the underside of the scaffold limb on the south side of the crown (refer to Appendix 5 for notes on Sulphur Polypore). The fungal bracket is growing at a previous pruning point or shed limb wound. The wound itself has occluded however, the evidence of bark staining and the fungal fruits indicate that there is likely to be decay in this part of the branch. The branch itself has been significantly reduced in the past and is not considered to be a hazard at the present time.



Photograph 2 showing fungal brackets of Sulphur polypore on underside of branch.

2.5 Conclusions of Tree Inspection

2.5.1. This inspection did not find any evidence that the tree is unstable at ground level or that the root plate has lifted or moved in the recent storm conditions. The presence of fungal bodies of Sulphur polypore is not considered to be a hazard at present.

3. Discussion

3.1 General

3.1.1. This property stands in an area likely to be underlain with clay soils. It is known that trees can cause damage to buildings by extracting moisture from the lattice structure of the clays resulting in volumetric changes and possible foundation movements.

3.1.2. Generally, damage to buildings arising from the presence of trees is extremely unlikely to occur. Calculations indicate that only 0.036% of amenity trees are responsible for such damage and

as yet no reliable method has been developed to determine which trees pose a threat to building foundations. The content of the report should be read in that context.

3.1.3. This investigation has identified one Oak tree sufficiently close to the buildings that its roots may influence the foundations.

3.1.4. Much of the published data regarding the role of different tree species in cases of subsidence damage to buildings and the distance from the building is taken from The Kew Root Survey 1989 by Cutler & Richardson.

3.1.5. However, Gasson PE & Cutler DF 1998 in a paper published in the Arboricultural Journal, noted "There is increasing concern that data on tree root spread in 'Tree Roots and Buildings' (Cutler and Richardson, 1989) are open to misinterpretation by insurers, home owners and arboriculturists. Insurers have tended to use maximum root spread figures, which we believe to be statistically and biologically unsound".

3.1.6. They note that the maximum distance between tree and damage is statistically unlikely to happen with any regularity. Their conclusion suggests that very different figures are appropriate as safe distance - in general the distance which includes 75% of damage attributed to a particular species. For smaller species, the 50% boundary is more appropriate whilst for particularly large growing species the 90% figure is sufficiently cautious. It should also be noted that where a tree is within the distances quoted does not imply that damage is inevitable.

3.2. Mechanisms of Tree Root Damage to Buildings.

3.2.1. Indirect damage to structures can be caused by soil drying and seasonal movement, with ground subsiding during the summer months, and recovering (i.e. moving upwards) during the winter months. This pattern of movement is diagnostic of movement caused by changes in moisture content of a clay soil below foundation level. During the summer months the roots take water from the soil causing the soil to dry and foundations to subside. During the winter the roots are inactive, allowing the soil to rehydrate and the foundations to recover.

3.2.2. It is for this reason that foundations are recommended to be at depths of at least 900mm below ground level so they are at or below the level where natural seasonal moisture loss will have an influence on soil shrinkage.

3.2.3. Direct damage occurs in close proximity to a tree where there are large structural roots. Tree roots cause damage to buildings as the woody roots thicken each year. In temperate parts of the world, the growth rings in woody roots are just as well defined as those found in the stem. This secondary thickening gradually pushes the buttress roots and shallow growing roots closer to the surface. As they expand, roots can exert a force great enough to distort walls and foundations, and after a structure fails, the upheaval increases as roots continue to expand. Most damage is found less than 2 m from the tree, partly because of the fast growth of this part of the root system, and also as a result of the 'buttressing' of roots close to the stem. As roots branch and taper, they become progressively smaller and less damaging with increasing distance from the tree. However, some damage can still be found at greater distances from the trunk.

3.2.4. Seasonal movements are usually greatest close to the tree and diminish with distance. Although this might be deemed anomalous, when a tree is in very close proximity, the larger roots beneath the structure can provide support, and reduce the extent of movement.

3.3. Likely Effect of the Oak Tree on Foundation Stability

3.3.1. Common Oak are recognised by a number of authorities as being of high-water demand, with a medium growth rate in good conditions, and thought to be deep rooted on clay soils.

3.3.2. The Kew Root Survey noted that the maximum tree to damage distance recorded for Oaks was 30 metres, in 90% of cases the tree was closer than 18 metres, in 75% of cases the tree was closer than 13 metres, and in 50% of cases of damage to property foundations the tree was closer than 9.5 metres. Tree 1 is 11.1 metres from the front northeast corner of the house and 8.7 metres from the side extension at 14 Page's Lane: and 18.4 metres from the front elevation of 1 St. Martin's Terrace. The tree is considered to be within the theoretical zone of influence for the roots to potentially have a detrimental effect on the foundations of 14 Page's Lane.

3.3.3. The tree is not considered to be a significant threat to 1 St. Martin's Terrace as it is beyond the 75% tree to damage distance, and the excavation and retaining wall of the front lightwell will restrict the root growth towards the house foundations.

4. Current Observed Damage

4.1. Damage to Garden Wall to South of Tree 1

4.1.1. The retaining wall of the front shrubbed is constructed of double-bond bricks and varies in height from 0.47 metres at its east end to 0.77 metres at its north end. The wall is a curved structure and was constructed circa 2000 when the building was converted to residential use. There is cracking extending from ground level to the top of the wall immediately to the south of the trunk and this section of the wall has been rebuilt in the past. Refer to photographs taken at the time of the inspection included below.

4.2. Damage to Concrete drive and front path/steps

4.2.1. The concrete driveway and car parking area at the front of 1 St. Martin's Terrace measures approximately 13 x 10 metres and predates the conversion of the convent to residential housing. The slabs have lifted and rotated differentially resulting in raised vertical edges and cracking as shown in photograph 5 below.

4.2.2. The steps and path between the concrete drive and the front door of 1 St. Martin's Terrace have sunken, particularly on the west side, refer to photograph 4 below.

4.3. Damage to Paving at 14 Page's Lane

4.3.1. The front paved area and off-street parking within 14 Page's Lane is distorted around the inspection chamber and drains; and has sunk particularly on the eastern side adjacent to the party boundary (refer to photograph 6 below). In addition, there is cracking to the floor slab and tiling of the side extension.



Photograph 3 showing damage to retaining wall of shrubbed at 1 St. Martin's Terrace.



Photograph 4 showing damage to front path at 1 St. Martin's Terrace.



Photograph 5 showing lifting and rotation of concrete drive at 1 St. Martin's Terrace.



Photograph 6 showing distorted and sunken paving at 14 Page's Lane.

5. Tree management

5.1. Risk Management

5.1.1. The main question in assessing the need for remedial action is whether failure to carry out such action would leave an unacceptable risk to persons or property. Topping or complete removal of the tree would remove all possibility of injury or damage; however, the concept of risk management is gaining acceptance on the part of tree owners and managers. If the risk is quantified as far as can be achieved with available methods appropriate decisions about remedial action can be taken. As with the assessment of hazards and risks, the decision whether or not to take remedial action must be made in the knowledge that there can never be an absolute guarantee of safety for trees, or any other structures exposed to extremes of weather.

5.1.2. The choice of remedial action must be determined primarily by the need to remove or mitigate a hazard. Most forms of remedial action are directed towards defects in trees, the type and severity of treatment required can usually be determined by the nature of the defect and its estimated influence on the safety factor of the tree or the affected part of the tree.

5.1.3. Most types of hazards involve the potential failure of a tree or part of a tree under its own weight or as a result of movement in the wind. In many sure cases the likelihood of failure can be lessened by cutting back branches, so the load placed on the defective zone by weight or wind pressure is reduced. This can be achieved effectively by shortening the 'lever arm' of the structure, for example, by reducing the height of the tree or the length of an individual hazardous branch, and by repeating such treatment if subsequent growth re-creates the hazard. Another way of reducing the 'sail area' would be to thin the crown of the tree. This practice can be combined with crown reduction, and the combination tends to produce smaller wounds than reduction alone and fewer wounds than thinning alone.

5.2. Landscaping and Groundwork Options.

5.2.1. **Concrete Driveway:** The existing concrete driveway dominates the front garden area of the property. Large areas of hard impermeable surfaces and can cause local temperatures to rise (often referred to as the urban heat island effect). Concrete is impermeable to rainwater, and in this case, the driveway slopes downhill to the north and away from the buildings so effectively prevents any rainfall from soaking into the front garden area of 1 St. Martin's Terrace. In addition, there is likely to be a thermocline between the underside of the concrete slabs and the underlying soils causing moisture the condense beneath the concrete so allowing root growth to proliferate beneath the concrete slabs.

5.2.2. Removing or reducing the size of the concrete parking area will allow rainwater to penetrate the underlying soils so reducing storm water run off and improving the rooting conditions for the Oak tree. The concrete could be completely removed and replaced using porous hard surfacing and a cellular raft system (such as Cellweb). Another option would be to reduce the area of the hard surfacing by removing the area of concrete closest to the house to allow the planted garden area to be extended. In addition, breaking up any retained concrete slabs and installing a topping layer of gravel would 'infill' any uneven areas and vertical trip hazards whilst increasing the rainwater penetration beneath the parking area.

5.2.3. **Install a Root Barrier:** A trench could be excavated along the party boundary between 1 St. Martins Terrace and 14 Pages Lane. The concrete slabs could be broken up using a pneumatic

hammer and a trench excavated by hand digging or Airspade to below the rooting level of the tree and neatly cutting the roots within the trench. Once the trench is completed a root barrier of Ribbed Root Panels or CuTex Copper root barrier can be installed to manufacturers specifications. The trench will then be back filled using the original soil carefully tamped into place and could be returned to an herbaceous planting area.

5.2.4. The Oak tree has a root protection area (RPA) that equates to a circle with a radius of 14.4 metres. The installation of the root barrier would be within the RPA of the Oak tree. However, in general, Oak is tolerant of some root disturbance and the potential benefits of improving rain water penetration into the rooting area is likely to outweigh the temporary root loss.

5.2.5. **Removal or repairs to Shrubbed Retaining Wall:** If the area of concrete parking is reduced adjacent to the shrubbed it would be possible to remove the retaining wall, remove the infill soil, and regrade the soil as a slope. This would negate the need for the retaining wall and lower the soils levels around the base of the tree back to the original level. If the wall is retained there are some engineered solutions that may reduce the direct damage of the root growth for example constructing the wall on lintel bridging the roots.

6. Conclusions

6.1.1. The tree may be causing direct damage by the expansion of the roots growing against the garden wall and beneath the concrete parking area.

6.1.2. The roots may be contributing to indirect damage to the neighbouring property due to the uptake of water close to the foundations.

7. Recommendations

- Manage tree at approximately its current size by undertaking a crown reduction on a 3-year cycle. An application to undertake a crown reduction to the previous (and outermost) pruning points by removing approximately 1.5 metres branch length should be submitted to London Borough of Haringey for TPO consent.
- Whilst undertaking the crown reduction the scaffold limb on the south side at 2 metres should be assessed to establish the extent of any decay caused by Sulphur Polypore and this should be monitored as part of the cyclical crown management.
- Install a root barrier along party boundary between 1 St. Martins Terrace and 14 Page's Lane.
- Remove or reduce the area of concrete hard surfacing within the front garden of 1 St. Martin's Terrace.

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APPENDIX 1

TREE DATA: 1 ST. MARTIN'S TERRACE, LONDON N10 1QY.

Tree No.	Species	Height (metres)	Crown spread (metres)	Trunk dia. @ ground level (cms.)	Age Class	Comments
1	Oak (<i>Quercus robur</i>)	15.5	N = 7.2 E = 6.3 S = 7.8 W = 6.0	1200	Mature	Tree subject of TPO. Good condition. Normal vigour. Soil levels raised around base of tree. Root flare not visible. Some bark wounding and occluded wounds around base. Single stem at ground level. Epicormic growth between 2 & 5 metres on trunk. Occluded wounds on trunk. Branch removal on northeast side with minor decay pocket in pruning wounds. Crown breaks at 2.5 metres. Tree heavily reduced in past. Managed by routine crown reduction. Fungal brackets of Sulphur Polypore on scaffold limb on south side of crown. Prominent tree at front of property. High landscape amenity value.

APPENDIX 2

REFERENCES

1. Tree No.

Given in chronological order, commencing at "1".

2. Species

Names given are 'common names'.

Latin names of species found on the site are as follows:

3. Height.

Measured approximately with the aid of a clinometer, given in metres.

4. Crown radius.

Measured approximately with the aid of a tape measure, given in metres.

5. Dbh.

Trunk diameter at "breast height", 1.5m above ground level, given in centimetres.

6. Age class.

1. Young
2. Semi-mature
3. Mature

7. Distance from Structure.

Centre of trunk to nearest face or point of the building, given in metres.

8. Comments.

Comments have been made relating to the following:

- Health or condition of the tree
- Safety of the tree, particularly close to actual or proposed public access
- Aesthetics of the tree where appropriate

References

Arboricultural Practice Note 4, "Root Barriers and Building Subsidence" Marshall, Patch & Dobson 1997. *Arboricultural Advisory and Information Service*)

British Standard Recommendations for Tree work BS 3998: 1989

Arboriculture Research Note 36 89 TRL Tree Roots & Underground Pipes, G. Brennan, D. Patch & F.R.W. Stevens. 1989.

Principles of Tree Hazard Assessment and Management: David Lonsdale 1999

Diagnosis of ill-health in trees: David Lonsdale 1994

Tree Diseases & Disorders: Causes Biology & Control in Forest and Amenity trees H Butin D Lonsdale

The body language of trees: Claus Mattheck & Helge Breloer 1995

Manual of Wood Decays in Trees: K. Weber & C. Mattheck 2003

Tree Preservation Orders a guide to the law and good practice

Fungii on Trees a photographic reference. David Humphries and Chistopher Wright 2021.

Fungii on Trees and their complex relationships. Lynne Boddy 2021.



APPENDIX 3

LEGAL PROTECTION OF TREES

Before work is carried out on any of the trees mentioned in this report, it is essential that the owner satisfy himself as to whether or not they have legal protection. Such protection is summarised briefly below:

Conservation Areas.

Before work is carried out work on any tree over 7.5 centimetres in diameter (measured at 1.5 metres from ground level), growing in a Conservation Area designated under the Town and Country Planning (Tree Preservation) (England) Regulations 2012, the Local Planning Authority must be notified in writing. The Authority then has six weeks to consider the matter during which time Officers may make a Tree Preservation Order in respect of any trees that are the subject of the notification. After the six weeks has expired, if the Authority has made no objection, work can proceed.

Tree Preservation Orders.

Before any work is carried out on a tree which is the subject of a Tree Preservation Order made under the Town and Country Planning (Tree Preservation) (England) Regulations 2012 the permission of the Local Planning Authority must be obtained. Such application for permission must generally be by way of a formal Planning Application, which may necessitate consideration by the Planning Committee of the Authority (although many Authorities delegate powers to deal with routine matters to their professional Officers).

There are exceptions to the above broad outlines; however, in the current instance these do not apply.

APPENDIX 4

A NOTE ON THE ACTION OF TREE ROOTS

ON SHRINKABLE CLAY SUBSOILS

1. Certain soils containing high proportions of the Montmorillonite or Miceaceous Clays have the capacity to change in volume according to their water content. This is because water is absorbed into the inside of the clay particles when the soil is wetted and can be withdrawn by various outside factors.
2. One of the most important ways in which water is withdrawn is as a result of the action of plant roots. Roots extract water from the soil and convey it through the plant to the leaves where it is lost to the atmosphere - a process known as transpiration. All plants do this to varying degrees; even grass extracts considerable quantities of moisture from the soil.
3. By virtue of their large size, trees have both a large rooting volume from which to extract water, and a large leaf area through which to lose it to the atmosphere. (Note: some trees, however, have developed in such a way as to minimize their water demand).
4. Problems arise when a tree which has a high-water demand is growing on a soil containing a high proportion of shrinkable clay when there is a building close enough to be affected by the changes in soil volume consequent on increase and decreases in the soil water content.
5. Decreases in volume will lead to a settling effect during dry periods, causing structural damage to buildings in severe cases. This is known as subsidence. Felling the offending tree is not always the simple answer as an established tree may have been desiccating the soil on which a structure stands for many years before building took place. When the tree is felled, the drying stops, the soil re-wets and expands. This may cause a phenomenon known as 'ground heave', which can be very damaging to buildings.
6. Careful observation and monitoring over a period is often necessary to establish the causes of subsidence or heave in cases where a tree or trees may be implicated. The close proximity of a tree to a building will not necessarily result in structural damage to that building.
7. In many cases where trees have been implicated in such structural damage, it has been found that the structures had been built on foundations, which were unsuitable for shrinkable clay soils.

APPENDIX 5 Notes on Sulphur polypore (*Laetiporus sulphureus*)

1. *Laetiporus sulphureus* occurs on a range of both broadleaved and coniferous trees, but is particularly common on *Quercus*, *Castanea* and *Taxus*.
2. The fruit bodies consist of brackets or fronds with wavy margins that occur either singly or in overlapping groups ranging from 10 to 30cm across. When fresh the fronds are bright yellow fading to a dull cream or whitish colour.
3. The early stages of fungal development may be inconspicuous as once the fungal hyphae have entered into the wood cells; they can lie dormant until the moisture regime in the wood becomes suitable for active fungal growth. In the early stages of decay, a yellow or red discolouration develops in the wood, and this changes to a rich red brown as the decay advances. Decay is usually confined to the heartwood which it enters via pruning wounds or broken branches.
4. The species is generally considered to be saprotrophic on dead sections of the host tree. It is infrequently associated with the failure of branches or partial stem collapse; likely to be more frequent on hosts with a weaker natural wood strength. The fungus can cause a hazard, though trees generally remain safe until the decay becomes extensive.