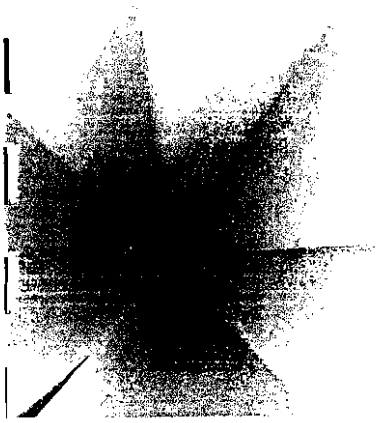
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Consulting Arborist

TREE RISK ASSESSMENT
7 EVANS CLOSE, DIDSBURY

FOR
ANDY DODGSON
7 EVANS CLOSE
DIDSBURY
MANCHESTER
M20

Ref: SFRA1012
Date: 10 SEPTEMBER 2008



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1.0 Purpose of the Report

1.1 A report is required to provide advice on the health, mechanical integrity and management of trees at the location shown on the title page in the form of a Quantified Tree Risk Assessment.

2.0 Terms of Reference

2.1 We are instructed by Andy Dodgson to: -

- Assess the condition of trees on site and provide a quantified tree risk assessment;
- Advise on management of trees;
- Prepare a schedule of surveyed trees;

2.2 This report is based upon a visual inspection. The consultant shall not be responsible for events that happen after the date of the report due to factors that were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

2.3 Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.

2.4 The consultant accepts no liability in respect of the trees unless the recommendations of this report are carried out under his supervision.

2.5 Assessing the potential influence of trees, upon load bearing soils, beneath existing and proposed structures, resulting from water abstraction by trees or rehydration of shrinkable soils, was not included in the contract brief and is, therefore, not considered in the report. The consultant cannot be held responsible for damage arising from such action.

3.0 Introduction

3.1 The site is located within the City of Manchester and comprises a mews type house with associated garden and driveway. For the purpose of this report, the surveyed trees are early-mature specimens located in the rear garden of the property.

3.2 Consultation with the Manchester City Council planning department has revealed that there is a blanket tree preservation order on site. Permission of the local authority should be sought before undertaking any tree work operations.

3.3 Scott Fitzgerald carried out the assessment of trees. The survey and assessment of trees was carried out on 8th September 2008. Weather conditions during the site visit were fine.

3.4 All data collected from the tree survey is produced in a tabulated schedule in **Appendix 1.** The assessment of trees was of a general nature and was carried out from ground level without invasive investigation; therefore the disclosure of hidden crown defects cannot be expected.

4.0 Tree Data Collection

4.1 Data collected during the survey is detailed in the **Individual Tree Risk Survey** in **Appendix 1.** Trees have been surveyed individually. Individual trees are prefixed (T).

4.2 **Height** of the tree is estimated to the nearest metre or where possible by using a clinometer.

4.3 **D.B.H. (Diameter at Breast Height)** is the size of the girth of the main trunk measured at 1.5m above ground level where possible with a diameter tape and recorded in millimetres.

4.4 **Age Range** Tree maturity has been assessed as Y = Young, SM = Semi Mature, EM = Early Mature, M = Mature, PM = Post Mature.

4.5 **Vitality** is a measure of physiological condition. Trees have either been assessed as D = Dead, MD = Moribund, P = Poor, M = Moderate or G = Good.

5.0 Conclusions

5.1 Where the risk index is below 10, remedial works may need to be carried out to bring the acceptable risk below the 1/10,000 guideline. For the purposes of this risk assessment, we have adopted a 1/10,000 limit of acceptable risk. "For members of the public who have a risk imposed on them 'in the wider interest' HSE (Health and Safety Executive) would set this limit at 1/10,000 per annum" (Health and Safety Executive 1996)

5.2 T1 is an early-mature Sycamore situated close to the boundary fence to the west. There is a slight stem lean to the east. A small partially occluded wound was identified at the base of the stem on the north/westerly side. There are lesions with a rust to black coloured watery exudate on the main stem with dead bark underneath, possibly indicating the presence of *Armillaria spp.* (Honey Fungus). The stem bifurcates at approximately 2.5m with a partially occluded bark union which has dead and missing bark on the north/westerly side. Probing the union with a length of cane revealed decay in the centre of the

tree down to almost one metre. There are several non-occluded and partially occluded pruning wounds on the primary branches where the tree has been crown lifted in the past. Some of the pruning wounds have left stubs that are decaying back into the parent stem. The crown is biased to the east due to the proximity of a tree in a neighbouring property that has been recently removed after shedding large diameter limbs onto the client's property. Other branch attachments appear sound throughout the crown. Foliage cover appears to be normal for the species. There is a dead branch hung up within the crown.

T1 has been recently exposed due to the removal of a tree in a neighbouring property. This sudden exposure, coupled with the damage/decay at the base of the co dominant stems could lead to future problems. I recommend that the tree is reduced by approximately 25 - 30% to reduce the loading around the weak fork and allow the trees retention. The union should be monitored on a regular basis especially following extreme weather events.

5.3 T2 is an early-mature Beech abutted to the boundary fence to the west. There are partially and non-occluded pruning wounds to the main stem and primary branches. The crown is biased to the north due to T1. Some slight damage was identified on several secondary branches possibly due to bark stripping by squirrels. There is a small amount of small diameter deadwood throughout the crown.

5.4 T3 is an early-mature Sycamore situated in the north/easterly corner of the rear garden. It is tri-stemmed from ground level with acutely included bark unions. There is a large, decayed cavity at the base of the tree extending down to approximately one metre. There is no existing rootball directly below the tree. Rhizomorphs were identified in the cavity, indicating the presence of *Armillaria* (Honey Fungus). Evidence of possible fibre buckling was identified on the westerly main stem. The crown is heavily biased to the north/east due to the presence of neighbouring trees. This tree should be removed.

5.5 Evidence of *Armillaria* has been found on T1 and T3. *Armillaria* or Honey Fungus is a wood decaying fungus that causes degradation of woody tissues in the root and buttress zones of various tree genera. Retained trees should be monitored on a regular basis for the development and spread of the pathogen

6.0 Recommendations

6.1 Carry out **management** recommendations as per the **Individual Tree Risk Survey** found in **Appendix 1.**

6.2 All arboricultural works should be carried out by suitably qualified personnel and to standards contained in BS3998 - Recommendations for Tree Work (1989). All personnel must use personal protective

equipment to the minimum current industry standards and in accordance with arboricultural industry codes of practice.

6.3 It is advisable to have trees inspected by a qualified arboriculturist regularly, and in this instance I recommend that these inspections should be made yearly. Monitoring of the branch union of T1 should be carried out after extreme weather events.

7.0 References

BS3998 - 1989 - *Recommendations for Tree Work* - British Standards Institute, London

Lonsdale, D. 1999 - Principles of Tree Hazard Assessment - Her Majesty's Stationary Office, London

Strouts, R.G. and Winter T.G. - Diagnosis of ill-health in trees - Her Majesty's Stationary Office, London

Appendices

Appendix 1

INDIVIDUAL TREE RISK SURVEY (A)

SITE:	7 EVANS CLOSE, DIDSBURY, M20
CLIENT:	ANDY DIDGSON
BRIEF:	RISK ASSESSMENT FOR TREES IN REAR GARDEN OF 7 EVANS CLOSE, DIDSBURY

SURVEYOR:	S FITZGERALD
ASSESSMENT DATE:	08/09/08
VIEWING CONDITIONS:	FINE
JOB REFERENCE:	SFRA1012

TREE NO.	SPECIES	AGE RANGE	HEIGHT (M)	DIA. (MM)	VITALITY		TARGET RANGE	SIZE RANGE	PROB RANGE	WEATHER FACTOR	REDUCED MASS %	RISK INDEX	REVIEW YEARS
T1	Sycamore	EM	15	660	G		5	2	4			351K	1

COMMENTS
- Slight stem lean to east
- Small amount of damage at base on north/westerly side
- Stem bifurcates at approximately 2.5m with partially included bark union
- Damaged bark around union on north/westerly side, cavity between union extends deep into tree
- Several non-occluded and partially occluded pruning wounds
- Crown biased to east due to recent removal of tree in neighbouring property
- Hung up dead branch in crown

MANAGEMENT
- Reduce crown by approximately25-30%
- Monitor damaged branch union on a regular basis
- Remove hung up branch

T2	Beech	EM	14	650	G		5	4	2			14K	1

COMMENTS
- Several non-occluded and partially occluded pruning wounds
- Crown slightly biased to north due to proximity of T1
- Some slight branch damage possibly caused by squirrels
- Small amount of deadwood throughout crown

MANAGEMENT
-

T3	Sycamore	EM	15	1X430 1X380 1X445	G		2	2	3			4.06	N/A

COMMENTS
- Tri-stemmed from ground level with included bark unions
- Large cavity between three unions where root ball has decayed up to a metre below ground
- Rhizomorphs identified in cavity indicating the presence of *Armillaria* (Honey Fungus)
- Small amount of deadwood throughout crown

MANAGEMENT
- Fell and grind out remaining stump

HEADINGS & ABBREVIATIONS

TREE NO.	REFERENCE NUMBER. REFER TO PLAN OR NUMBERED TAGS WHERE APPLICABLE
SPECIES:	THREE TO FIVE CHARACTER ABBREVIATION OF COMMON NAME
AGE RANGE:	Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE
HEIGHT:	OTHER THAN WHERE THE HEIGHT OF A TREE IS CRITICAL TO THE OUTCOME OF THE RISK ASSESSMENT, APPROXIMATELY 1 IN 10 TREES ARE MEASURED USING A CLINOMETER AND THE REMAINDER ESTIMATED AGAINST THE MEASURED TREES
CROWN SPREAD:	MEASURED OR ESTIMATED DIAMETER OF CROWN AT THE WIDEST POINT
DIA:	STEM DIAMETER - MEASURED AT A HEIGHT OF APPROXIMATELY 1.3 METRES.
VITALITY:	A MEASURE OF PHYSIOLOGICAL CONDITION. D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, G = GOOD
SIZE RANGE:	SIZE CATEGORY OF MOST SIGNIFICANT PART CONSIDERED LIKELY TO FAIL. RANGES 1-5. 1 = LARGE, 5 = SMALL.
PROB RANGE:	PROBABILITY OF FAILURE WITHIN 12 MONTHS. RANGES 1-5. 1 = HIGH, 5 = LOW.
TARGET RANGE:	HIGHEST VALUE TARGET THAT THE MOST SIGNIFICANT PART LIKELY TO FAIL COULD STRIKE. RANGES 1-6. 1 = HIGH, 6 = LOW VALUE/OCCUPANCY.
WEATHER FACTOR	ALLOWANCE FOR REDUCED ACCESS DURING HIGH WINDS WHEN IN SOME SITUATIONS TREE FAILURE IS MOST LIKELY, OR SITUATIONS WHERE THE PROBABILITY OF TREE FAILURE IS INCREASED BY HOT DRY WEATHER, WHICH AT THE SAME TIME INCREASES PEDESTRIAN ACCESS. TO BE APPLIED BY MULTIPLYING THE RISK INDEX BY THE GIVEN FACTOR
REDUCED MASS %	WHERE THE MASS OF A TREE OR BRANCH IS REDUCED BY DEGRADATION THE RISK INDEX IS MULTIPLED TO REFLECT THE PERCENTAGE OF MASS REDUCTION
RISK INDEX:	RISK OF SIGNIFICANT HARM + 1,000 = RISK INDEX (E.G. RISK INDEX 20 = RISK OF SIGNIFICANT HARM 1 IN 20,000) AN ADDITIONAL FIGURE IN BRACKETS MAY BE SUFFIXED EITHER T OR F REPRESENTING 'F' THE RATE OF FAILURES OVER THE YEAR, AND 'T' THE RATE OF MULTIPLE OCCUPATION OVER THE YEAR, E.G. 1(10T)/10,000 REPRESENTS A RISK OF HARM 1/10,000 TO 10 OCCUPANTS OR AN EQUIVALENT MONETARY VALUE SUFFIXES: (M) = FOR GENERAL ARBORICULTURAL OR SILVICULTURAL MANAGEMENT; (S) TO REMOVE OR REDUCE THE RISK OF DIRECT DAMAGE TO A FIXED STRUCTURE BY MEANS OF CIRCUMFERENTIAL GROWTH
REVIEW:	PERIOD (YEARS) TO NEXT INSPECTION.
ITALIC TEXT:	TEXT CHANGES MADE IN THE CURRENT YEAR.

Appendix 2

GLOSSARY OF ARBORICULTURAL TERMS

Abscission. The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way

Abiotic. Pertaining to non-living agents; e.g. environmental factors

Absorptive roots. Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients

Adaptive growth. In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium This helps to maintain a uniform distribution of mechanical stress

Adaptive roots. The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading

Adventitious shoots. Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'

Anchorage. The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree

Architecture. In a tree, a term describing the pattern of branching of the crown or root system

Axil. The place where a bud is borne between a leaf and its parent shoot

Bacteria. Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms

Bark. A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem

Basidiomycotina (Basidiomycetes). One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes

Bolling. A term sometimes used to describe pollard heads

Bottle-butt. A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification

Bracing. The use of rods or cables to restrain the movement between parts of a tree

Branch:

- **Primary.** A first order branch arising from a stem
- **Lateral.** A second order branch, subordinate to a primary branch or stem and bearing sub-lateral branches
- **Sub-lateral.** A third order branch, subordinate to a lateral or primary branch, or stem and usually bearing only twigs

Branch bark ridge. The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem

Branch collar. A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base

Brown-rot. A type of wood decay in which cellulose is degraded, while lignin is only modified

Buckling. An irreversible deformation of a structure subjected to a bending load

Buttress zone. The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions

Cambium. Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally

Canker. A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria

Canopy species. Tree species that mature to form a closed woodland canopy

Cleaning out. The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree

Compartmentalization. The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region

Compression strength. The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees with special drilling devices

Compressive loading. Mechanical loading which exerts a positive pressure; the opposite to tensile loading

Condition. An indication of the physiological vitality of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree

Crown/Canopy. The main foliage bearing section of the tree

Crown lifting. The removal of limbs and small branches to a specified height above ground level

Crown thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure

Crown reduction/shaping. A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape

Crown reduction/thinning. Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape

Deadwood. Dead branch wood

Decurrent In trees, a system of branching in which there is a well defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. excurrent) In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly

Defect. In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment

Delamination. The separation of wood layers along their length, visible as longitudinal splitting

Dieback. The death of parts of a woody plant, starting at shoot-tips or root-tips

Disease. A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms

Distal. In the direction away from the main body of a tree or other living organism (cf. proximal)

Dominance. In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours

Dormant bud. An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so

Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood

DBH (Diameter at Breast Height). Stem diameter measured at a height of 1.5m or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

Deadwood. Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard

Endophytes. Micro-organisms which live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture

Epicormic shoot. A shoot having developed from a dormant or adventitious bud and not having developed from a first year shoot

Excrescence. Any abnormal outgrowth on the surface of tree or other organism

Excurrent. In trees, a system of branching in which the crown is borne on a number of major widely-spreading and secondarily branched limbs (cf. excurrent)

Felling licence. In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber

Flush-cut. A pruning cut which removes part of the branch bark ridge and or branch-collar

Girdling root. A root which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue

Guying a form of artificial support with cables for trees with a temporarily inadequate anchorage

Habit. The overall growth characteristics, shape of the tree and branch structure

Hazard beam. An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting

Heartwood/false-heartwood/ripewood. Sapwood that has become dysfunctional as part of the natural aging processes

Heave. A term mainly applicable to a shrinkable clay soil which expands due to re-wetting after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate

High canopy tree species. Tree species having potential to contribute to the closed canopy of a mature woodland or forest

Incipient failure. In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part

Included bark (ingrown bark). Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact

Increment borer. A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood

Infection. The establishment of a parasitic micro-organism in the tissues of a tree or other organism

Internode. The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches

Lever arm. A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch

Lignin. The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification

Lions tailing. A term applied to a branch of a tree that has few if any side-branches except at its end, and is thus liable to snap due to end-loading

Loading. A mechanical term describing the force acting on a structure from a particular source; e.g. the weight of the structure itself or wind pressure

Longitudinal. Along the length (of a stem, root or branch)

Lopping. A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

Mature Heights (approximate):

- Low maturing - less than 8 metres high
- Moderately high maturing - 8 - 12 metres high
- High maturing - greater than 12 metres high

Microdrill. An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density

Minor deadwood. Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree

Mulch. Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material

Mycelium. The body of a fungus, consisting of branched filaments (hyphae)

Occluding tissues. A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood)

Occlusion. The process whereby a wound is progressively closed by the formation of new wood and bark around it

Pathogen. A micro-organism which causes disease in another organism

Photosynthesis. The process whereby plants use light energy to split hydrogen from water molecules, and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products.

Phytotoxic. Toxic to plants

Pollarding. The removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one operation, or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to re-pollard on a regular basis, annually in the case of some species.

Primary branch. A major branch, generally having a basal diameter greater than 0.25 x stem diameter

Primary root zone. The soil volume most likely to contain roots that are critical to the health and stability of the tree and normally defined by reference to Table 1 of BS5837 (1991) Guide for Trees in Relation to Construction.

Priority. Works may be prioritised, 1. = high, 5. = low

Probability. A statistical measure of the likelihood that a particular event might occur

Proximal. In the direction towards from the main body of a tree or other living organism (cf. distal)

Pruning. The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs

Radial. In the plane or direction of the radius of a circular object such as a tree stem

Rams-horn. In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London

cross-section
Rays strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood
Red-rot. A form of decay in which reddish pigments are present but which is biochemically a white-rot; not to be confused with brown-rots which sometimes also have a reddish-brown colour
Reactive Growth/Reaction Wood. Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth)
Removal of dead wood. Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branchwood and broken snags
Removal of major dead wood. The removal of, dead, dying and diseased branchwood above a specified size
Root-collar. The transitional area between the stem/s and roots
Root-collar examination. Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and/or stem
Root zone. Area of soils containing absorptive roots of the tree/s described
microscopic and dispersed in air or water. The Primary root zone is that which we consider of primary importance to the physiological well-being of the tree
Sapwood. Living xylem tissues
Secondary branch. A branch, generally having a basal diameter of less than 0.25 x stem diameter
Selective delignification. A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose
Shedding. In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales
Silvicultural thinning. Removal of selected trees to favour the development of retained specimens to achieve a management objective
Simultaneous white-rot. A kind of wood decay in which lignin and cellulose are degraded at about the same rate
Snag. In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point
Soft-rot. A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole
Spores. Propagules of fungi and many other life-forms; most spores are **Shrub species.** Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees
Sporophore. The spore bearing structure of fungi
Sprouts. Adventitious shoot growth erupting from beneath the bark
Stem/s. The main supporting structure/s, from ground level up to the first major division into branches
Stress. In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature
Stress. In mechanics, the application of a force to an object
Stringy white-rot. The kind of wood decay produced by selective delignification
Storm. A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes
Structural roots. Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree
Subsidence. In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots
Subsidence. In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight
Taper. In stems and branches, the degree of change in girth along a given length
Target canker. A kind of perennial canker, containing concentric rings of dead occluding tissues
Targets. In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it
Topping. In arboriculture, the removal of the crown of a tree, or of a major proportion of it
Torsional stress. Mechanical stress applied by a twisting force
Translocation. In plant physiology, the movement of water and dissolved materials through the body of the plant
Transpiration. The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells
Understorey. A layer of vegetation beneath the main canopy of woodland or forest or plants forming this
Understorey tree species. Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland
Vascular wilt. A type of plant disease in which water-conducting cells become dysfunctional
Vessels. Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees
Veteran tree. A loosely defined term for an old specimen that is of interest biologically, culturally or aesthetically because of its age, size or condition and which has usually lived longer than the typical upper age range for the species concerned
White-rot. A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded
Wind exposure. The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity
Wind pressure. The force exerted by a wind on a particular object
Windthrow. The blowing over of a tree at its roots
Wound dressing. A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection; only of proven value against fresh wound parasites
Woundwood. Wood with atypical anatomical features, formed in the vicinity of a wound

V1-05

Incorporating extracts from Lonsdale, D. 1999. Principles of Tree Hazard Assessment. Her Majesty's Stationary Office, London